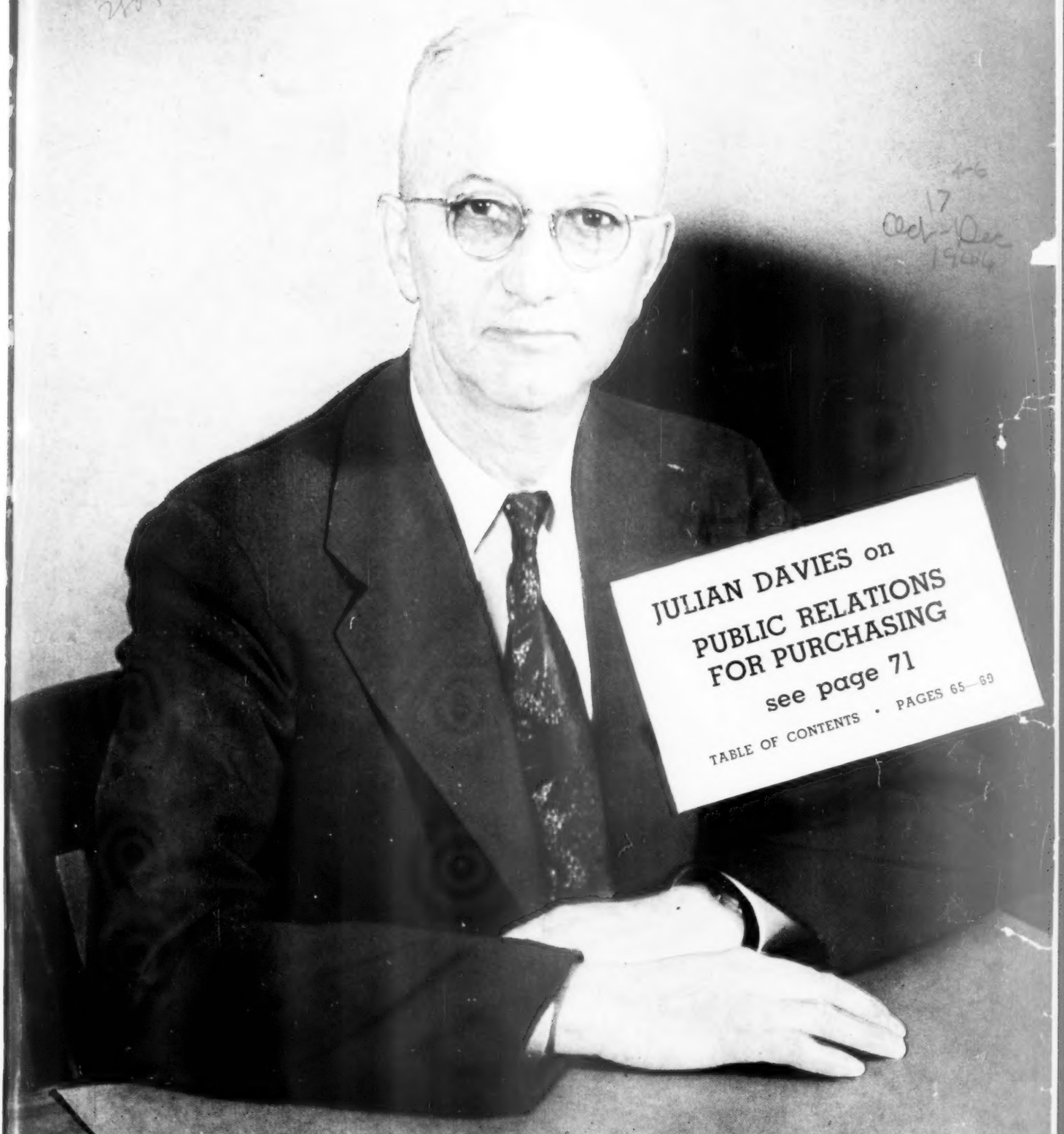
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PURCHASING

October, 1944

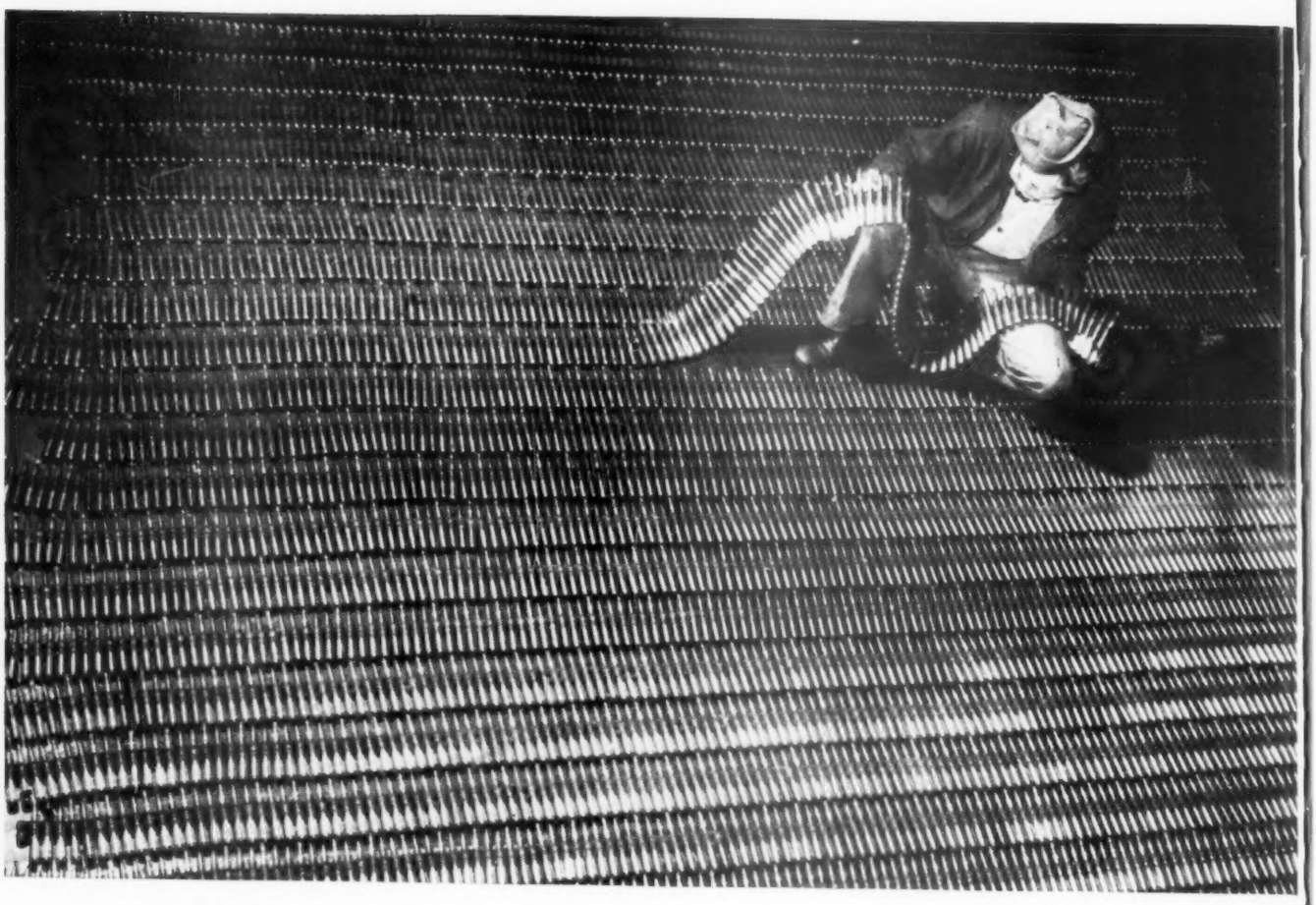
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JULIAN DAVIES on
PUBLIC RELATIONS
FOR PURCHASING
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A CONOVER-MAST PUBLICATION • 35 CENTS



Cartridges BY THE MILE

43 *SECONDS of continuous firing* —that's all it takes for one P-47 Thunderbolt fighter to use up all the .50 calibre machine gun cartridges you see in the picture. No wonder they have to be made "by the mile".

As management knows, mass production of munitions calls for effective lubrication all along the line . . . and plants, large and small, everywhere are availing themselves of Texaco Engineering Service and Texaco Products.

Preferred in many fields, a few of which are listed at the right, Texaco performance can definitely increase production in *your* plant.

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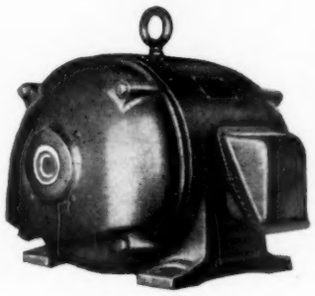


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3 OTHER TYPES OF PROTECTION



Form J — General Purpose Application



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TEFC — Protects Against Destructive Dust, Grit, Powdered Materials

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Century C MOTORS

385

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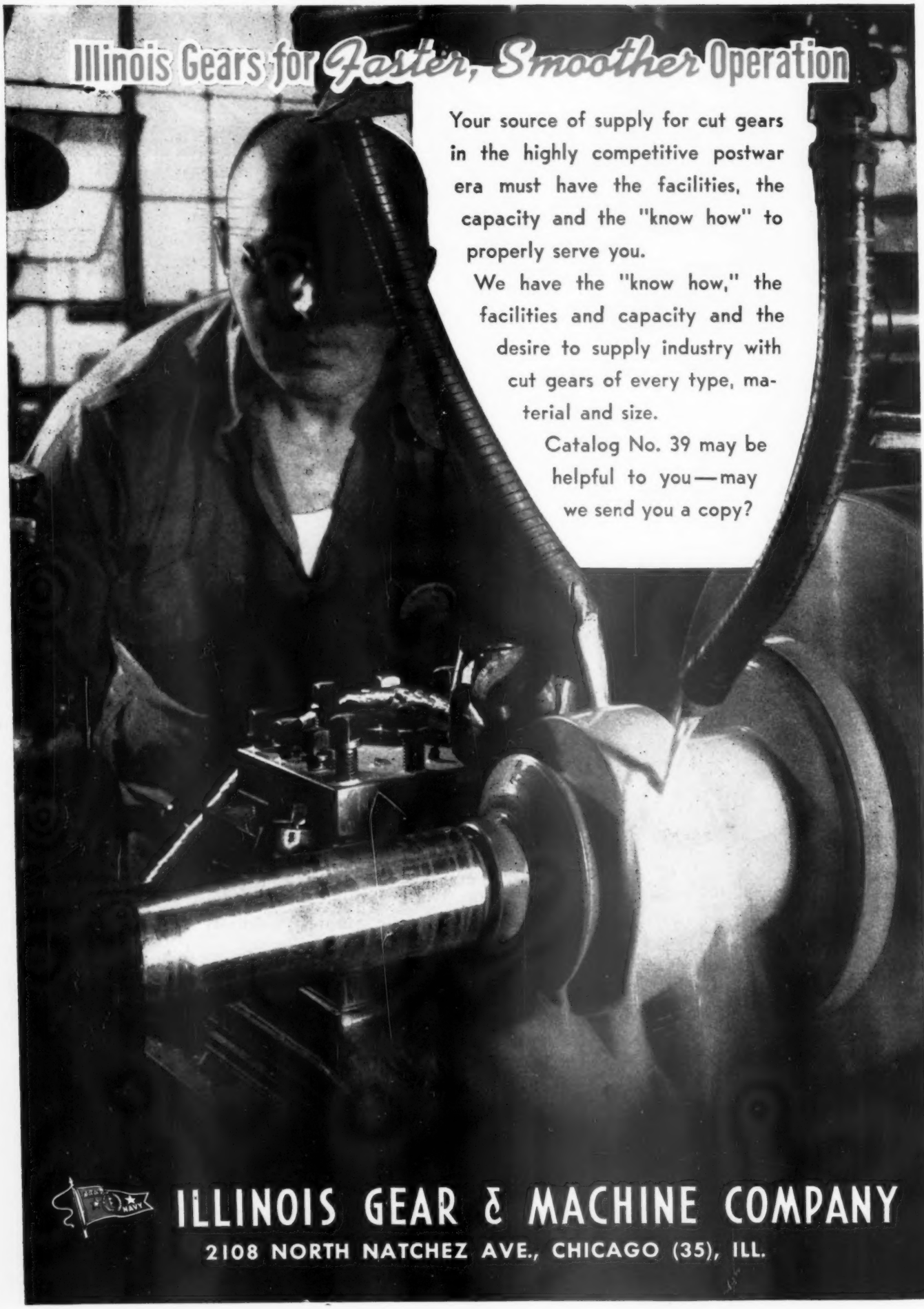
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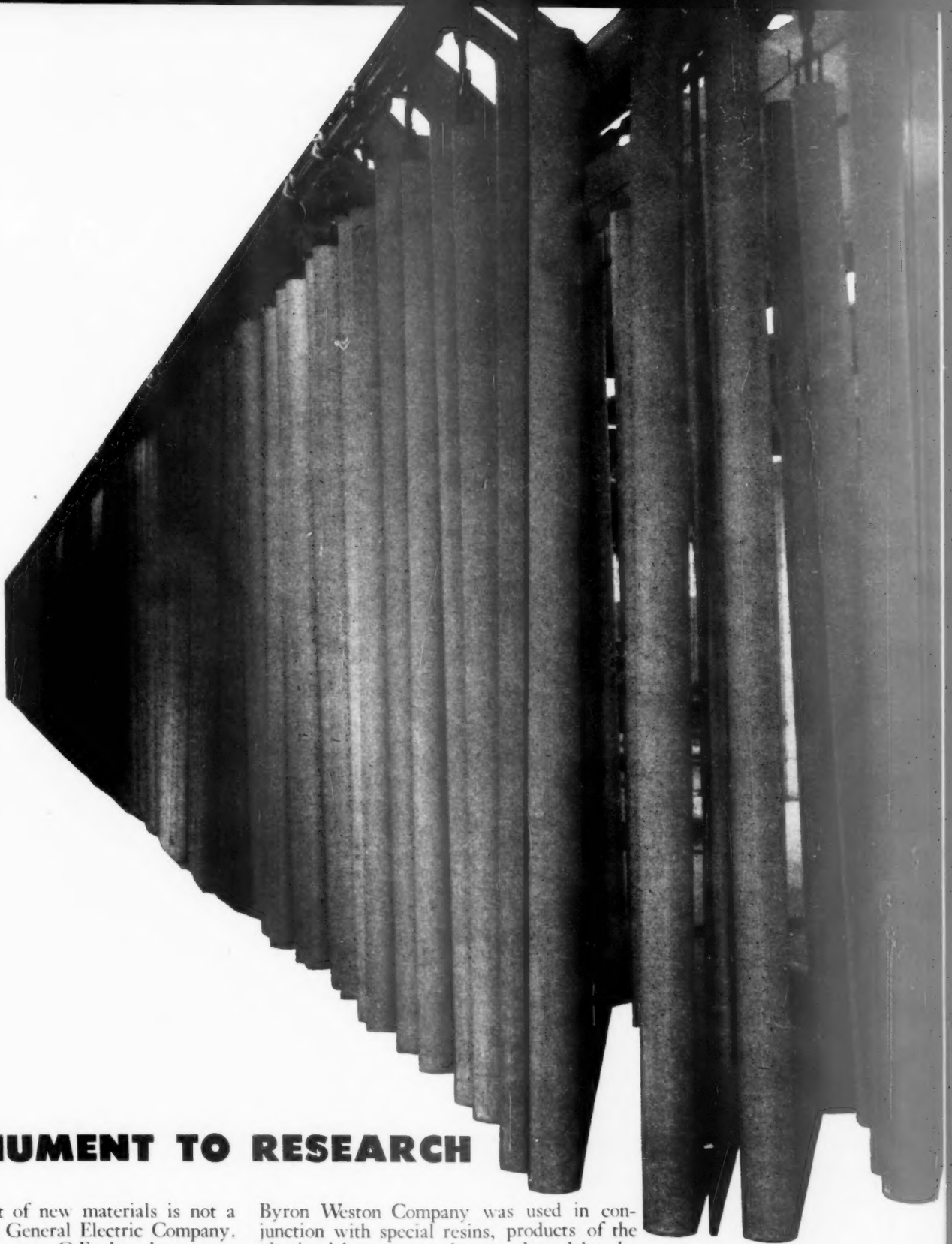
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☐ **1. PLASTICS** — Eighteen-page bulletin written particularly for those who have had little or no association with the plastics industry, is recommended reading. It was published by the Hydraulic Press Mfg. Co. You will find it worthwhile.

☐ **2. NITROCELLULOSE** — This is basic textbook on the properties and uses of soluble nitrocellulose, base for plastics, lacquers, coated textiles and many other products. It covers the results of years of research work by Hercules Powder Co. and is described as a "most complete compilation of technical information on soluble nitrocellulose." It includes data on typical properties of nitrocellulose plastics. Hercules Powder Co.

☐ **3. READY REFERENCE FOR PLASTICS**—(Repeat item) This excellent book available from the Boonton Molding Company will give you a broad picture of plastics in a very understandable way. The thermosetting ureas, phenolics, and furfurals, and the various thermoplastics and their properties are explained in every-day English.

☐ **4. DOW PLASTICS** — Short story in words and pictures of the plastic materials produced by the Dow Chemical Company —Styron, Ethocel and Saran,—styrene, ethylcellulose, and vinylidene chloride plastics you should be familiar with.

☐ **5. MONSANTO PLASTICS** — Three Booklets—"The Family of Monsanto Plastics," "Resinox, A Monsanto Plastic" and "Lustron A Monsanto Plastic," There are six basic types described in the first book including Saflex, a rubber-like vinyl acetal resin. These bulletins will give you a broad picture of plastics utilization. Monsanto Chemical Co.

☐ **6. CO-RO-LITE** — Here's something different—Rope Fibre Plastics. They rate high in tensile, flexural, compressive and impact strengths. There are three Co-Ro-Lite molding compounds. Can be used in flat sheets or molded to practically any shape, even to deep drawing of thin-walled objects. Columbian Rope Co.

☐ **7. PANELYTE** — The Structural Plastic. Made in sheets, rods, tubes, molded forms, fabricated parts. Panelyte is offered in variety of grades, depending on base material, resin content, type, etc. Excellent electrical properties, strong, tough. Each grade is intended for a particular use. Factual Data Bulletin gives physical characteristics and uses of the various grades. Panelyte Div., St. Regis Paper Co.

☐ **8. DUREZ PLASTICS NEWS**—A monthly publication issued by Durez Plastics & Chemicals Inc. on new uses of Durez materials and new developments. Get on the mailing list now. You will certainly receive some interesting information in this publication in the months to come.

☐ **9. DUREZ CASTING RESINS**—A comparatively new development that is believed to offer tremendous future possibilities. Pamphlet contains more or less technical discussion with full instructions for use. If your company is forming light metals, this will prove of unusual interest. Durez Plastics & Chemicals Inc.

☐ **10. SYNTHANE TECHNICAL PLASTICS** —Synthane plastics are available in several grades. Electrical insulating qualities, machinability, dimensional stability, resilience, corrosion resistance, light weight, toughness, tensile, flexural and impact strength, are among their qualities. Available in sheets, rods, tubing, and "sandwich" types. Used extensively in aviation, radio, electrical appliance, power equipment, chemical and metal finishing, mechanical and other industries. Synthane Corp.

☐ **11. FORMICA** — Three publications, namely, "Formica Data Book", "Formica Plastic Surfaces", and small booklet "What Formica Is!" Data book gives chemical and physical characteristics of various types of Formica. Bulletin on "Plastic Surfaces" deals with architectural and furniture applications. Booklet describes manufacture and uses. The Formica Insulation Co.

☐ **12. DILECTO** — Two publications, "7 non-Metallic Basic Materials" and "Dilecto, A Laminated Phenolic Plastic". First tells about qualities and fabrication of seven Continental-Diamond plastic products. The second tells about Dilecto a phenol fibre laminated plastic featured by insulation resistance, dielectric strength, machinability, chemical inertness, lightness, and comes in various grades. Available in sheets, rods and tubing. This book also describes Ryertex non-metallic bearing material. Continental Diamond Fibre Co.

☐ **13. TENITE**—Book describes Tenite—Eastman cellulose acetate and cellulose acetate butyrate molding compositions. This book contains over 100 illustrations of typical applications. Tenite has unlimited color range from crystal clear to opaque. The pictures alone give an insight into amazing uses of plastics. Tennessee Eastman Corporation.

☐ **14. MARCOLITE**—This is a product of the Plastics Divn. of the Continental Can Co., which is made in thicknesses of .01" or even less to 3" or more. It comes in several types with a variety of specific uses depending on resin base and filler. Continental Can Co., Inc. Plastics Div.

☐ **15. KOROSEAL** — "Handbook of Technical Information". This is tradename of group of plasticized vinyl resins developed by B. F. Goodrich Co. Hundreds of products are made of Koroseal—chemical, electrical and mechanical. Koroseal offers unusual wear resistance and chemical stability, and it is flame resisting.

☐ **16. BAKELITE REVIEW** — Published quarterly by Bakelite Corp. and Plastics Division of Carbide & Carbon Chemicals,

(*Continued on page* 12)

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Corp. Its purpose is to inform industry of the latest developments in plastics and their application. You should get it regularly.

☐ **17. VINYLITE RESINS** — Their Forms, Properties & Uses. This is a 20-page book published by the Carbide & Chemicals Corporation.

☐ **18. VELON**—The Modern Miracle (Plastic) Fabric. This booklet in color shows Velon in furniture, car seats, screens, women's wear and accessories. "Gorgeous beauty combined with lasting, non-soiling qualities". Firestone Tire & Rubber Co.

☐ **19. ALLYMER RESINS**—Allymer is the name of line of Allyl Resin Monomers, Columbia Chemical Division, Pittsburgh Plate Glass Co. Set of bulletins titled "Data Sheet", "Instruction Sheet", and "Research Report", gives technical information on general properties and characteristics, utilization, and technical data on influence of various factors in processing.

☐ **20. CELLULOSE ACETATE** — "Hercules Cellulose Acetate". This book of 28 pages lists the properties and characteristics of Hercules Cellulose Acetate and presents helpful technical data, on Hercules Acetates in plastics, protective coatings and films.

☐ **21. SELF-CLEANING COOLANT & SLUDGE TANKS**—Booklet describes line of self cleaning sludge tanks, coolant tanks, and central station sludge collecting systems, which are said to be entirely new. Coolant tanks may be had with or without filtering. Sludge tanks range up to 1200 gallon capacity. The collecting systems convey the sludge to self-cleaning tanks, eliminating individual tanks. Hapman Conveyors, Inc.

☐ **22. PLUG GAGE BLANKS** — Bulletin describes Emergency Set containing 36 cylindrical plug gage blanks in steps of 1/16" with handles. Set will permit any shop to produce any size plug gage from .029" to 1.000" in few minutes work on cylindrical grinding machine. George Scherr Co.

☐ **23. DICTAPHONE ELECTRICORD RECORDING MACHINES**—Machines that will record both ends of telephone conversations, conferences, telephone messages, etc., are described in new four-page bulletin. Dictaphone Corporation.

☐ **24. STAMPING PARTS** — Bulletin describes "Lo Stress" steel stamps for stamping aircraft and automotive parts and assemblies, with new rounded face that provides minimum of set-up stress. Can be supplied in single letter and figure stamps, stamping dies for use in foot or power operated presses, and roller dies; also multiple character stamps. Tools can be supplied with controlled depth features where .003" to .006" depth of stamping must be maintained. Jas. H. Matthews Co.

☐ **25. HIGH SPEED STEEL**—Bulletin describes Jessop Purple Lable Extra high speed steel, 18-4-1 plus 8 to 9% cobalt,—a superior tungsten cobalt high speed steel. Jessop Steel Co.

☐ **26. CRANK CASE INSULATION**—Bulletin describes Motorcote, a plastic cork coating for insulating oil pans and crank cases. Motor oil reaches operating temperature quickly; water of condensation practically eliminated; crank case dilution reduced. J. W. Mortell Co.

☐ **27. FORGED STEEL FLANGES**—Fittings Division of Ladish Drop Forge Co. has issued new catalog giving complete descriptions and specifications of the Ladish line of forged steel flanges. It contains conversion tables and performance data, and also contains ASA tables on wartime pressure ratings.

☐ **28. PACKAGING**—Saran Film designed for metal protection during wartime is covered in 8-page bulletin issued by Dow Chemical Co. which details its properties and fabrication,—moisture impermeability, bursting strength, dimensional stability, chemical resistance, etc.

☐ **29. TENSION WIND-UP** machine for the smooth, controlled tension windup of wire, cable, rope, tape, cordage and other continuous and semi-continuous materials after processing operations is covered by new bulletin. Winding is accomplished without slip belts, clutches, friction pulleys, etc., but by hydraulic or electronic units build into the machine. Industrial Oven Engineering Co.

☐ **30. METAL PROCESSING and Cleaning**—Bulletin describes tanks designed and built for automotive parts cleaning, aircraft engine overhaul, spot welding operations, degreasing, pickling, rust proofing, plating, tinning, can cleaning by Los Angeles company. Company also builds pressure spray tanks and bench-size booths for small parts cleaning. Tivit Products Co.

☐ **31. WIRE ROPE SHEARS**—Bulletin illustrates hand shear for precision cutting of commercial grade wire rope, flat bars, round bars, and varying shapes and metals, and also a powerful hydraulic shear for the same purposes. Capacity of former 2½" x ½" flat bars, ⅞" round bars, 1½" wire rope; capacity of hydraulic unit to 2½" wire rope, 1⅝" wire rope and 3" x 1" flat bars. Watson Stillman Co.

☐ **32. CONCRETE FLOOR HARDENER and dust-proofer**—Small folder describes Flint-Tred, a crystalline substance which it is claimed, when dissolved in water and flushed over any ordinary concrete floor, will form a smooth, granite hard, dust free surface and dry quickly. Rock-Tred Corp.

☐ **33. PRECISION TAPPING ATTACHMENT**—Bulletin describes attachment that is said to provide controlled positive lead tapping. Readily installed on 17" Delta Drill Press. Controlled lead principle is said to make it possible for unskilled operators to consistently produce Class 3 or better threads. Douglas Machinery Co.

☐ **34. STAMPING TRIMMERS** — New 8-page bulletin QW-119 describes applications and operation of Quickwork stamping trimmers. Illustrations show the wide range of work that may be handled. Whiting Cor.

☐ **35. STARCH — AMIOCA** — Jointly prepared 16 page booklet details the physical and chemical properties of this new domestic starch, which for certain purposes is said to superior to other types of starch. It was prepared by American Maize-Products Co., National Starch Products Inc., and Stein, Hall & Co.

☐ **36. SCALES**—"KRON scales by Yale," Catalog R-44, covers entire line from dormant and portable platform types of special counting, batching, tensile strength and dynamometer models. It is a valuable reference book for Purchasing Departments. Yale & Towne Mfg. Co.

☐ **37. REFRACTORY LININGS**—Monolithic refractory lining for foundry ladles, side blow converters, acid electric furnaces, cupola breast and slag holes are described in Ironton Caro-Line bulletin. It is said to ram easier than ganister-clay mixture, to reduce labor costs and to give longer service, plus reduction in loss of castings due to slag inclusions. Ironton Fire Brick Co.

☐ **38. PUMPS For Petroleum Industry**—Bulletin No. 102 covers Blackmer bulk station twin and single units, truck pumps, and rotary pumps. Blackmer Pump Co.

(*Continued on page* 14)

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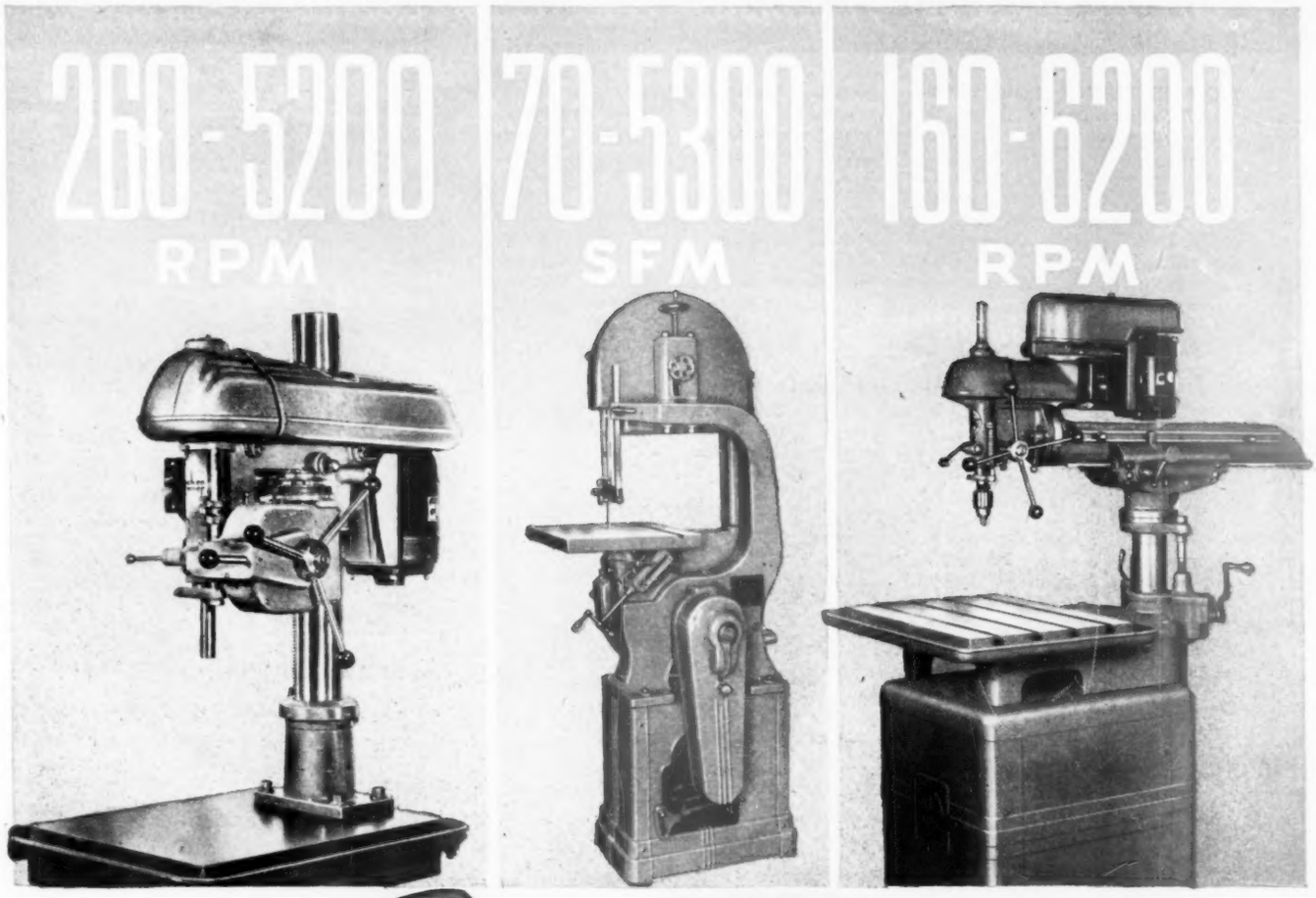
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RADIAL CUT-OFF MACHINES FOR METAL • MOTORS • BELT & DISC SURFACERS

"Know-How" Information, Continued

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☐ **39. HEAT EXCHANGE EQUIPMENT**—Catalog M-8802 describes 'Karbate' Corrosion Resistant Heat Exchange Equipment. Karbate materials are carbon or graphite products which are impervious to seepage of liquids and gases under pressure, and highly resistant to the action of corrosive materials. Booklet sets forth heat conductivity and physical and chemical properties of carbon, graphite and "Karbate" materials. National Carbon Co.

☐ **40. METALLIZING** — July-August Metallizer contains interesting article on Die Making With Mogul Metallizing Gun, and tells about various money-saving salvage jobs. Metallizing Co. of America.

☐ **41. METAL CONVEYOR BELTS**—Metal belts that come in three types, Chain-Link, Flat Wire, and Flex-Grid are described in new Cyclone Catalog No. 3. Belts of Chain-Link type come in variety of meshes, openings and gauges. Also available with turned up selvage. Flat Wire belt has open mesh which permits free circulation of air, liquids and steam. Flex-Grid is made of parallel wires and is easily cleaned. Latter is also furnished in design for complete circular return or less. Cyclone Fence Division.

☐ **42. INFRA-RED PROCESS**—"The Near Infra-Red Process" for baking, drying, preheating, dehydration, and similar operations. It is said to make for faster and better production with instant operation and radiation that is faster than other forms of heat transfer. Process and installations interestingly illustrated and described. The Fostoria Pressed Steel Corp.

☐ **43. WATER CONDITIONER**—The K. A. T. Water Conditioner, an anti-scale, anti-corrosion and anti-foam treatment, for use in water stills and evaporators, is described in circular released by American K. A. T. Corporation. K. A. T. is said to possess all the properties necessary for the safe cleaning of water stills, and to be the only material of its kind.

☐ **44. "FLEET-WELDING"**—This is title of 48-page booklet published by The Lincoln Electric Co., describing "Fleet Welding" which is claimed to be entirely new method for increasing the speed of welding mild steel. Technique is said to increase the speed of welding, and to materially cut costs. Booklet presents comprehensive coverage of the process.

☐ **45. SWITCH GEAR**—New catalog issued by I-T-E Circuit Breaker Co. describes "Safe, Steel-Clad Switchgear" known as Multumite, with air circuit breakers for service up to 600 volts a-c or 250 volts d-c. Catalog contains 32 pages. It illustrates construction features, and gives other pertinent data.

☐ **46. LETTERHEADS** — Folder contains samples of 13#, 16# and 20# brilliant white Anniversary Bond. Sample sheet shows printed, engraved and lithographed letterheads. Fox River Paper Corp.

☐ **47. RADIO & ELECTRONIC Book Guide**—Booklet lists wide selection of books on radio, electronics and related subjects. Listings cover simplest fundamentals to advanced practices. Allied Radio Corp.

☐ **48. POWER HANDTOOLS**—Small catalog describes Precise 35 hand power tool, 1/6 h.p., which operates at 35,000 r.p.m. under load. Precise Products Co.

☐ **49. LIQUIDS HANDLING**—New Bowser booklet tells about equipment for liquids storage, handling and dispensing for industry, such as self measuring pump, complete outfits for storing and dispensing lubricating oils and similar liquids, paints, varnishes, etc. Portable units are also described. Bowser, Inc.

☐ **50. FASTENINGS** — New catalog and data book for Purchasing Men and others describes Esna hex, anchor, and clinch type of nuts. Suggestions for typical applications "will help Purchasing Men" and designers plan their postwar products. Size, material, class fit, axial load strength based on pull-test data, military requirements, weight, finish and other information are presented in handy tabulated form. This is sizable book of 120 pages, and invaluable reference for Purchasing Department. Elastic Stop Nut Corporation.

☐ **51. MATERIALS HANDLING** — Forty-page catalog in colors describes Mercury tractors and trailers, trailer accessories, platform lift truck system, fork truck system, and power source including charging equipment. Also, insert on Procedure for Ordering Under WPB LO L-112. Mercury Mfg. Co.

☐ **52. UNIT HEATERS** — Modine vertical delivery unit heaters, and Modine horizontal delivery unit heaters are described in Bulletins 144 and 144-A, which contain complete descriptive data on the new lines of copper condenser unit heaters including sizes and steam and hot water performance tables. Available on AA-5 or better or on MRO order. Modine Mfg. Co.

☐ **53. TIRES**—Fifty-page manual entitled B. F. Goodrich U. S. Army Training School Manual on design and construction of pneumatic tires, for instructing Army personnel in the proper care, preventive maintenance and servicing of tires, tubes and other rubber products, is available. You may want copy for your motor transport department. It contains load and inflation tables, and tube, valve, flap and rim data on heavy duty military and civilian tires. B. F. Goodrich Co.

☐ **54. VIBRATION ABSORBERS** — Unusually interesting book of 34 pages tells about General Silentbloc flexible rubber Bearings, Mountings and Couplings for machinery and equipment in motion. They absorb vibration, allow torque action and correct for misalignment. They are termed indestructible bearings, and once installed they are trouble-free. Installations are unlimited from large drop forge hammers to shaft supports and hinge alignments. There are five types. Illustrations show interesting installations on oscillating mechanisms, radius and tie rods, and various equipment. No lubrication, no upkeep, no replacements, liquidproof, gasproof, dirtproof. General Tire & Rubber Co.

☐ **55. FLAMEPROOFERS** — Booklet describes Hercules chlorinated paraffins for flameproof and waterproof coatings for textiles, and flameproof paints and adhesives. There are two grades. Both are stable easy to use and compatible with most of the cellulose derivatives, resins, waxes, and plasticizers. Hercules Powder Co.

☐ **56. WELDING SYMBOLS CHART**—Entirely new and informative wall chart illustrating the basic characters of welding symbols recommended as American Standard by Americal Welding Society, presents the graphical language of the welding industry separately for fusion welding, for resistance welding, and for those requiring both fusion and resistance welding. 23 typical welded joints and sections are illustrated and marked with the symbols. Get copy for yourself, your designers and welding department. The Hobart Bros. Co.

☐ **57. ENGINE BEARING MANUAL** — Manual of interest and value to everyone concerned with automotive engine maintenance, 96 pages, contains information to assure correct selection and installation of bearings. It is profusely illustrated. Tables show crankshaft and bearing dimensions, etc., for all makes of cars, trucks, buses and tractors. Clawson & Bals, Inc.

(*Continued on page* 16)

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Please send me the "Know-How" Information checked.

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49 ☐ 50 ☐ 51 ☐ 52 ☐ 53 ☐ 54 ☐ 55 ☐ 56 ☐ 57 ☐

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COMPANY_____

ADDRESS_____

CITY_____ STATE_____

10/44

FOUR PAGES OF "KNOW HOW"—10-12-14-16

This pair of Macwhyte Type No. 1 ATLAS Braided Slings on a straight pull has a combined strength of 470.4 tons! When used in a basket hitch their combined strength is 665.2 tons and used with a safety factor of 5, they handle 133.04 tons easily and safely.

For handling Tons or Pounds!



MACWHYTE ATLAS Braided SLINGS

There is a size and length to meet your requirements

EASY TO HANDLE... because they are made from right and left lay ropes, they are flexible, do not twist and are light for their great strength.

SAFE... because they are made from the highest quality rope, properly designed and made by skilled craftsmen. As a connecting link between crane and load or as a means of gripping the load, there is no better sling made than the patented Macwhyte ATLAS Braided Sling.

Each sling is composed of two endless pieces of Monarch Whyte Strand wire rope, one right lay and one left lay, which are folded to provide two (or more) right lay and left lay members. These members are then spirally braided so that each endless rope runs the entire length of the sling body at least four times, regardless of the sling length or number of parts.

Numerous designs, strengths, and lengths are made

When the maximum load to be handled is determined, oversize needless weight and bulk is not necessary when you specify patented Macwhyte ATLAS Braided Slings.

Send your handling problems to Macwhyte Sling Engineers. They will recommend slings that inspire confidence in your workmen, and relieve you of handling worries.

Ask for our new Sling Catalog, S-7. A request on your company letterhead will bring it promptly.



Notice the uniform spiral braiding in an ATLAS Sling. In the 8-part ATLAS body, there are 2 pairs of left lay endless ropes, and 2 pairs of right lay endless ropes. There is no finer lifting element for maximum safety, minimum weight, and easy handling.



One order of Macwhyte Type No. 5 ATLAS Braided Slings equipped with Crescent thimbles. These slings are lightweight, flexible, easy to handle, and *safe!*

UNIVERSAL SAFETY — *Member National Safety Council*

ARMY E NAVY

MACWHYTE COMPANY

2918 FOURTEENTH AVENUE, KENOSHA, WISCONSIN

Manufacturers of the CORRECT wire rope for your equipment

Left-&-Right Lay Braided Slings · Aircraft Tie-Rods
Aircraft Cable · "Safe-Lock" Swaged Terminals

Mill Depots: New York · Pittsburgh · Chicago · Ft. Worth · Portland Seattle · San Francisco · Distributors throughout the U.S.A.

Manufactured under U.S. and Foreign patents

★ *Speed the Victory with more War Bonds!* ★

NO. 759-S

RIGHT-LAY **MACWHYTE SLINGS FOR INDUSTRY** LEFT-LAY

"Lifting safety to new heights"

Macwhyte ATLAS Braided Wire Rope Slings are made to meet the capacity of any crane built

"Know-How" Information, Continued

USE COUPON ON EACH PAGE

☐ **58. PIPE MILL**—For production of 1½" to 6" resistance weld steel pipe is described in bulletin issued by The Yoder Co. Production rate of 1½" pipe is about 80 ft. per minute, and that of 6" standard pipe is about 65 ft. per minute. This is a very interesting pictorial presentation of the continuous production of pipe from coiled strip steel.

☐ **59. PLASTIC FORMING TOOLS**—Casting of thermoplastic material for forming tools is described in new booklet, Tenite II Casting, just published by Tennessee Eastman Corporation. It should be of particular interest to industries engaged in the forming of sheet metal. Forming tools are made by casting molten plastic into or around finished shapes or models. Corners do not become rounded as do lead and soft metal alloys; cast into finished size without scraping and polishing; Tenite castings are easily machined. Eastman Kodak Co.

☐ **60. OILERS**—Thermal and bottle oilers with crystal-clear reinforced plastic bottles, for solid, wick and waste packed bearings, are described in single page bulletin. Manufacture states they offer "a new modern method for automatically lubricating bearings where only a small amount of oil is required." The Thermal oiler drops oil automatically when bearing heats and stops feeding when bearing cools. Bottle Oiler style has vibrating rod which on vibration releases oil to bearing. Trico Fuse Mfg. Co.

☐ **61. MECHANICAL SPRINGS**—Their engineering and design. This is an excellent book of over 100 pages for the spring purchaser. It is issued by the Wm. D. Gibson Co. who make some springs that are so fine it takes 38,000 to weigh a pound, up to a giant hot wound spring weighing almost 500 lbs. It contains a world of practical information and data and engineering tables. It is accompanied by Spring Data computer of the slide-rule type.

☐ **62. ELECTRIC HOISTS**—Materials handling in the push-button stage is the theme of 48 page P & H catalog on electric hoists for handling heavy loads up to 15 tons, illustrating hoists and monorail systems. Limit switch prevents over-travel; full magnetic push-button control, single or five-step variable speed. Various types and uses are explained. Harnischfeger Corporation.

☐ **63. TRANSFORMERS** — New 56-page booklet, GEA 4240, "Instrument Transformer Accuracy Standards" has been made available by General Electric. First part explains ASA accuracy standards for potential and current transformers and shows how they differ from NEMA standards. Second part is handy guide for the selection from a complete line of standard indoor and outdoor current and potential transformers. 60 illustrations.

☐ **64. HEAT INSULATION**—New 16-page catalog describes B-H insulations, monoblock effective up to 1600° F., Rockwool blanket between different style metal fabrics, effective up to 1200° F., fill material for temperatures up to 1350° F., pipe coverings up to 1200° F., insulating cement efficient up to 1800° F., felt insulation, up to 800°, and Koldboard, low temperature insulation from —150° to 300° F. Baldwin-Hill Co.

☐ **65. MILLER** — New 12-page catalog shows design and uses of "The Miller that Uses Its Head," and how this hand miller performs its fundamental function of bringing the cutter on a sliding head down to the work and also does the work of precision boring machines, lathes and grinders. Nichols-Morris Corp.

☐ **66. HOUR METERS** — Catalog No. 20 describes specialized instruments designed for application on individual types of engines to record actual running hours. They serve as speedometers on stationary engines. They help to maintain accurate operating time records. Standard hour meters and specially designed models are illustrated. Durant Manufacturing Co.

☐ **67. RADIO NOISE SUPPRESSION**—Bulletin GEA-4308 describes new Pyranol radio-noise-suppression capacitor, especially designed to reduce radio-noise voltage from generators, inverters, motors and other equipment. Compact and lightweight, dimensions being approximately 1¾" x 3⅝"; weight 4½ ounces. Designed to meet vibration tests required by U. S. A. A. F. specifications. General Electric Co.

☐ **68. WIRE ROPE**—Catalog G-15 of the Macwhyte Company contains wire rope data corrected to agree with Simplified Practice Recommendation R-198-43 issued by the National Bureau of Standards and U. S. Department of Commerce. The 170 pages of the catalog are tab indexed and designed to give you accurate information at your finger tips. Macwhyte Co.

☐ **69. MICROMETERS**—New line of certified accuracy micrometers are described in Catalog 14 released by Central Tool Co. They are of forged steel in non-corrosive black enamel finish, from one to six inches. They are available in sets with or without 10,000ths graduations, ratchet and lock nut. Polished frame micrometers with decimal equivalents on frame are available in the 1" and 2" sizes. Round anvil micrometers for use in measuring the wall thickness of tubing are available in the 1" size with either type of finish. Central Tool Co.

☐ **70. WAR PACKING MANUAL**—It is one inch thick and contains many samples of various types of Corroflex and Sherman V-lines of papers—greaseproof, acid-free, anti-corrosive, wax-free, corrugated, etc. You may find it of help in solving shipping and packing problems. Sherman Paper Products Corp.

☐ **71. CUTTING TOOLS** — New 20-page catalog illustrates and includes specifications of new counterbore and special high speed steel cutting tools. Eccentric principle is utilized in the design to completely equalize the torque load on the holder and the mating driving member of the cutter. Moreland Tool Co.

☐ **72. INDUSTRIAL GLOVE SELECTOR** — A unique gadget, this industrial glove selector made up in the form of a dial selector, shows what type of natural or synthetic rubber glove best withstands certain industrial conditions, chemicals, acids, oils and solvents. Surety Rubber Co.

☐ **73. DIAMOND TOOLS**—Diamond Powder, Dressing Tools, chisel Tools, Radius Tools, metal bonded diamond wheels, and other diamond cutting tools are described in Larco catalog. Larco Diamond Tools.

☐ **74. POWDER METALLURGY**—What is described as the most complete commercial catalog ever compiled on the subject of powder metallurgy is available from Chrysler Corporation's Amplex Division. It is a book of 168 pages designed to impart a complete knowledge of the wide variety of powder metal bearings and parts now being made under the Oilite trade name. The book shows a wide range of intricate parts of intricate shape and design made from metal powders. Chrysler Corp.

☐ **75. DIE HANDLING TRUCKS** — Die handling trucks said to frequently make a one-man job out of a two- or three-man job by handling dies from rack to press and back again, are illustrated and described in 6-page bulletin. Hydraulic operation requires no gears or rachets. Available in capacities up to 30,000 pounds. Lyon-Raymond Corp.

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10/44

FOUR PAGES OF "KNOW HOW"—10-12-14-16

They're Cutting Sanding Time 83% with SKILSAW BELT SANDERS

AT DURAMOLD DIVISION OF FAIRCHILD ENGINE AND AIRPLANE CORP.



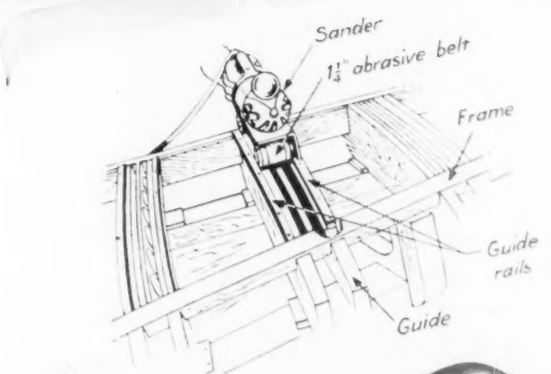
DURAMOLD Photo shows SKILSAW BELT SANDER in jig which won suggestion award for the designer, Albrecht Halbig.

A former 3 to 4 hour job for 2 men is a ONE HOUR JOB for ONE MAN with a SKILSAW BELT SANDER in a special jig

Stepping up finishing work on aircraft stabilizer frames is just one more example of how SKILSAW BELT SANDERS *do more jobs better!* In or out of a jig, on any flat and on many curved surfaces, SKILSAW BELT SANDERS do a cleaner, ripple-free finishing job faster and easier.

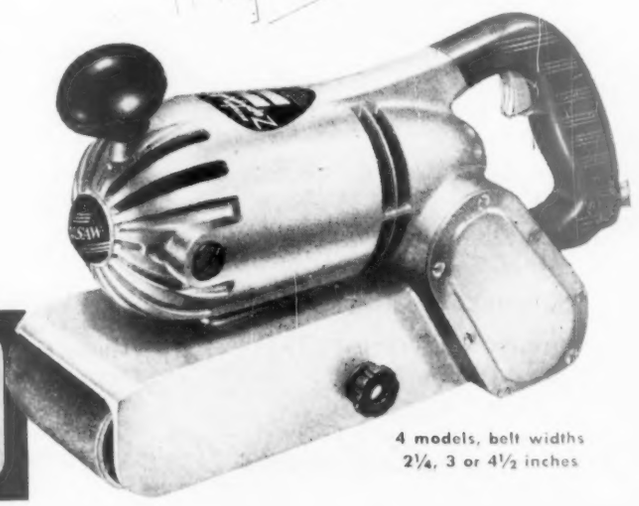
They pack plenty of power for round-the-clock production. They're light in weight, streamlined, handle easier in any position. And there's an extra measure of quality features in every SKILSAW BELT SANDER to give you low-cost operation longer.

If you work with wood, plywood, compositions or metal, find out the many ways SKILSAW BELT SANDERS can save time, money and manpower in your plant. Your distributor will show you on your own work. Phone him today.



SKILSAW, INC.
5033-43 Elston Avenue, Chicago 30, Ill.

Sales and Service Branches in All Principal Cities

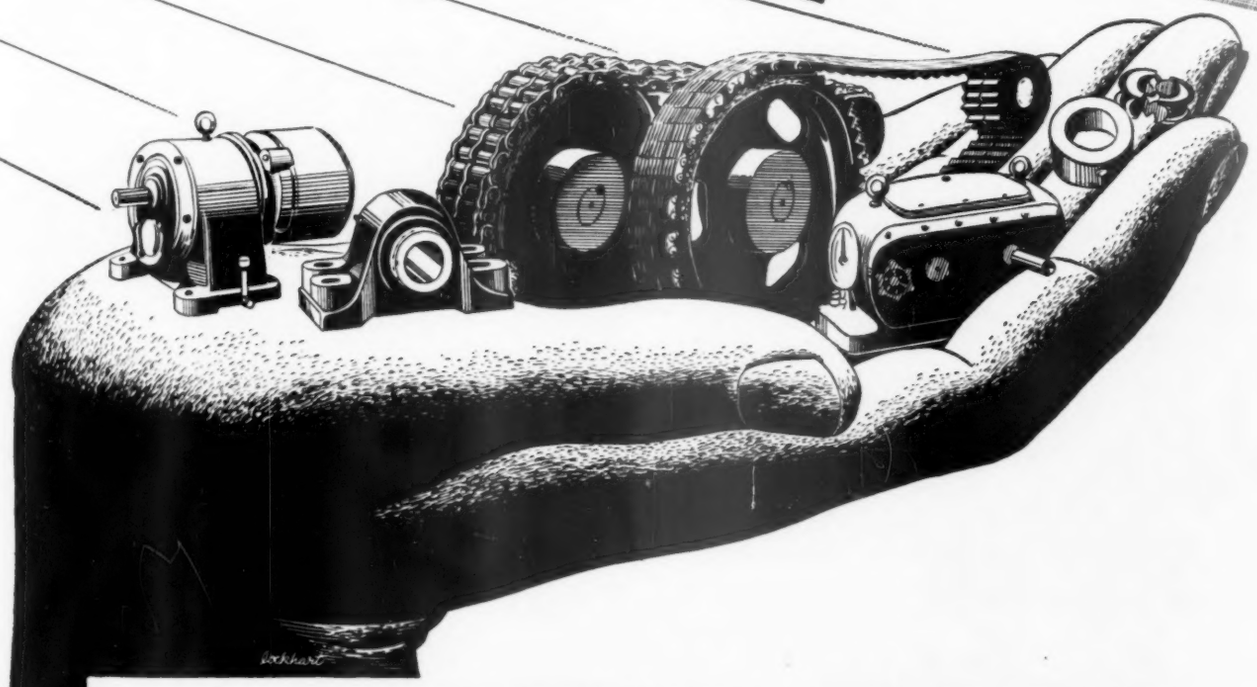


4 models, belt widths 2¼, 3 or 4½ inches

SKILSAW PORTABLE ELECTRIC TOOLS
MAKE AMERICA'S HANDS MORE PRODUCTIVE


THE SYMBOL OF QUALITY · LINK-BELT COMPANY ·
LB
IN POWER TRANSMISSION MACHINERY THERE'S—ONE
SILVERSTREAK SILENT CHAIN DRIVES
SILVERLINK ROLLER CHAIN DRIVES
DRIVE CHAINS—Malleable Iron, Promal & Steel
ROLLER & BALL BEARINGS
BALL & ROLLER BEARING PILLOW BLOCKS—All Types
BALL & ROLLER BEARING UNITS Duplex, Flange, Cartridge, etc.
BABBITTED BEARING PILLOW BLOCKS All Types
BABBITTED BEARING UNITS Flange, Step, Post, etc.
COUPLINGS—Rigid and Flexible
CLUTCHES & COUPLINGS Jaw & Friction
BASE PLATES—Plain & Adjustable
SHAFT COLLARS—Solid & Split
TAKEUPS—All Types
HANGERS—Cast Iron & Pressed Steel
SPROCKETS—Cut & Cast Tooth
GEARS—Cut & Cast
PULLEYS—All Types
SHAFTING—Machined to order
SPEED REDUCERS Worm Gear Herringbone Gear Motorized Helical Gear
VARIABLE SPEED CHANGERS P.I.V. Gear Variable Roller Drive (Motorized & Gear Set Types)
IN DESIGN • CONSTRUCTION • PERFORMANCE • SERVICE
All from One Source

HIGH STANDARD OF QUALITY



LINK-BELT

POWER TRANSMISSION MACHINERY

Experience of many years, working with every type of industry, guides Link-Belt engineers in their primary objective of designing equipment that will give the most efficient operation.

Link-Belt's facilities and manufacturing "know-how" are unsurpassed. Constant study of methods and materials assures precision and quality in every detail and phase of production.

Link-Belt's far-flung organization of branches and distributors is ready to serve you quickly and intelligently in supplying the correct type and size of equipment for each application, and to secure efficient, low cost operation.

Ask for catalogs giving engineering and application data on any type of power transmission machinery. Address the nearest office. 9646

LINK-BELT COMPANY

Chicago 9, Indianapolis 6, Philadelphia 40, Atlanta, Dallas 1, Minneapolis 5, San Francisco 24, Toronto 8
Offices, Factory Branch Stores and Distributors in principal cities.

Chicago Plants Indianapolis Plant Ordnance Plant San Francisco

A CHANGE-OVER



TEXACO

TEXACO

TUNE IN THE TEXACO STAR THEATRE EVERY SUNDAY NIGHT—CBS

RMUST"...

"Cleaning and preserving of production equipment shall be accomplished with minimum delay after 'shut down'."

Army Service Forces Bulletin, P.S. No. 300

AS Government contracts are terminated, millions of dollars worth of idle Government and privately-owned machinery, precision tools, and other production equipment will have to be promptly protected against damaging rust for periods ranging from weeks to years.

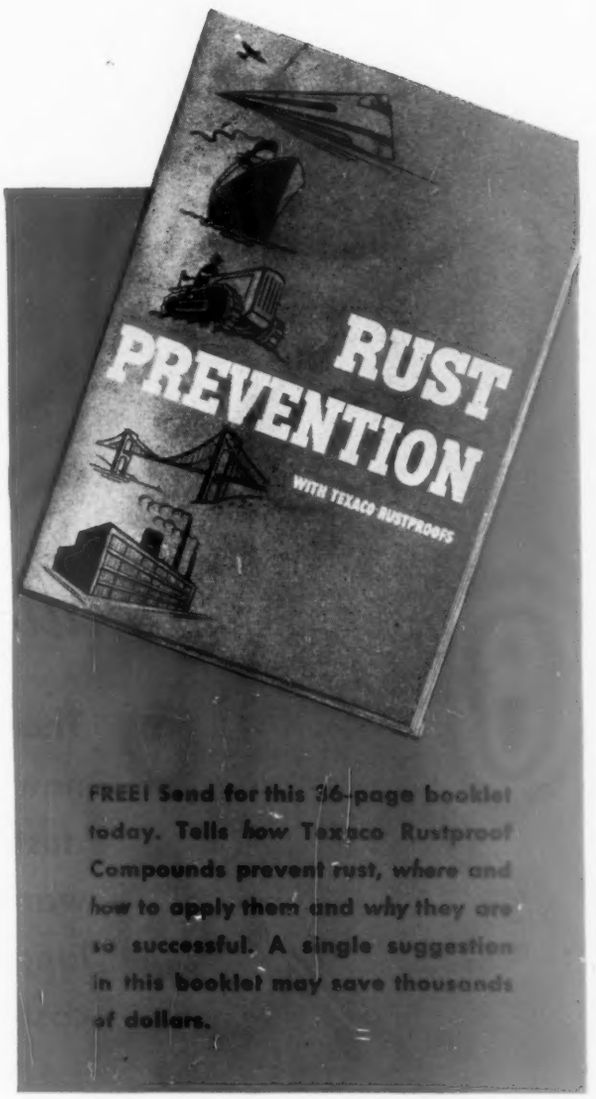
That is why *Texaco Rustproof Compounds* and other Texaco rust preventives should be available for prompt use when change-over time arrives. These effective products meet Government specifications for exterior and interior application, and are available for immediate delivery. By ordering NOW you will eliminate possible last-minute delays and disappointments.

For exterior application, *Texaco Rustproof Compounds* provide penetrating, self-sealing films which are not only waterproof but highly resistant to chemicals and fumes. Easily applied with brush or spray gun, they remain soft, healing over any scratches and abrasions. *Texaco Rustproof Compounds* are long lasting and very economical.

In many cases where rusting already exists, costly chipping and scaling is eliminated because *Texaco Rustproof Compounds* penetrate and loosen the scale so thoroughly that removal is greatly facilitated.

Texaco Rustproof Compounds have proven highly successful in protecting all types of parts and equipment from weather and salt water in overseas shipments.

Texaco Lubrication Engineering Service and Texaco Products for *interior* and *exterior* rustproofing are available to you through more than 2300 Texaco distributing points in the 48 States. The Texas Company, 135 East 42nd St., New York, 17, N. Y.

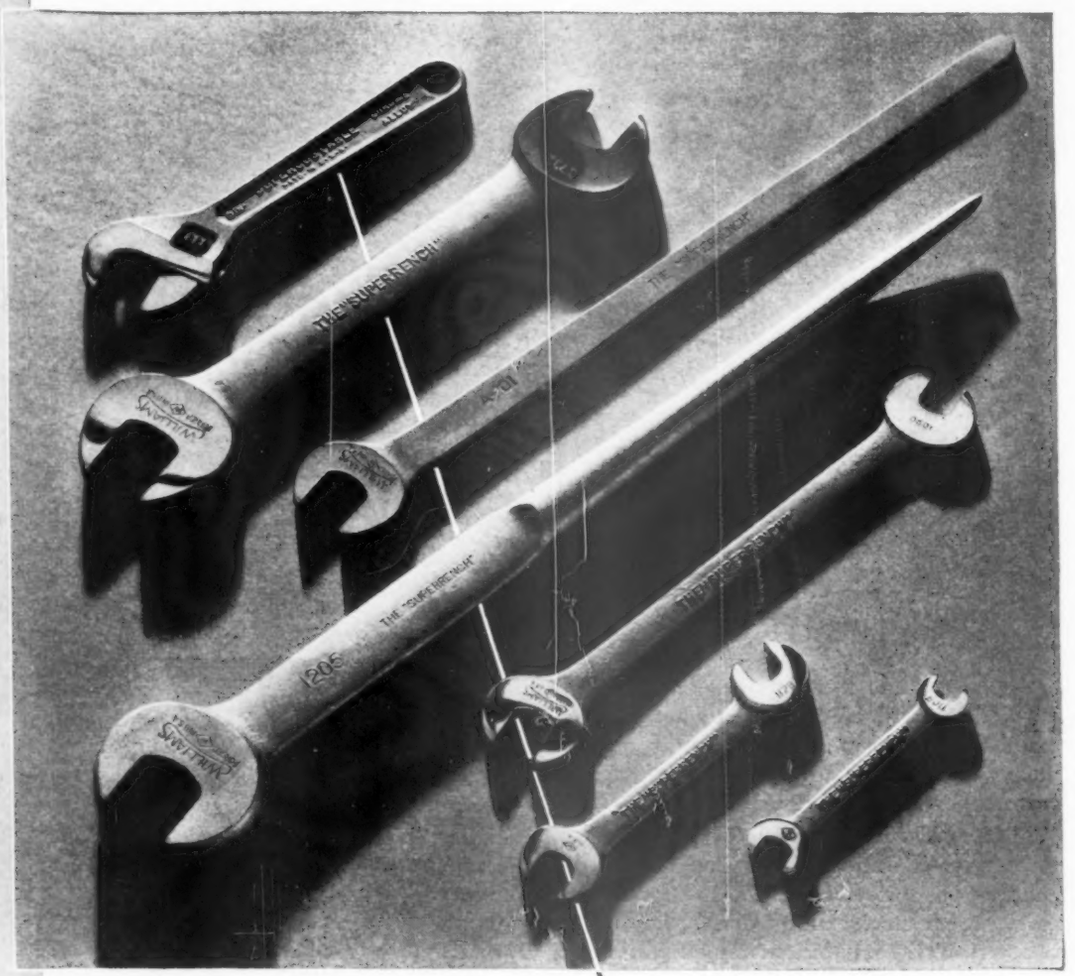


FREE! Send for this 36-page booklet today. Tells how Texaco Rustproof Compounds prevent rust, where and how to apply them and why they are so successful. A single suggestion in this booklet may save thousands of dollars.

Rustproofing Products

HELP WIN THE WAR BY RETURNING EMPTY DRUMS PROMPTLY



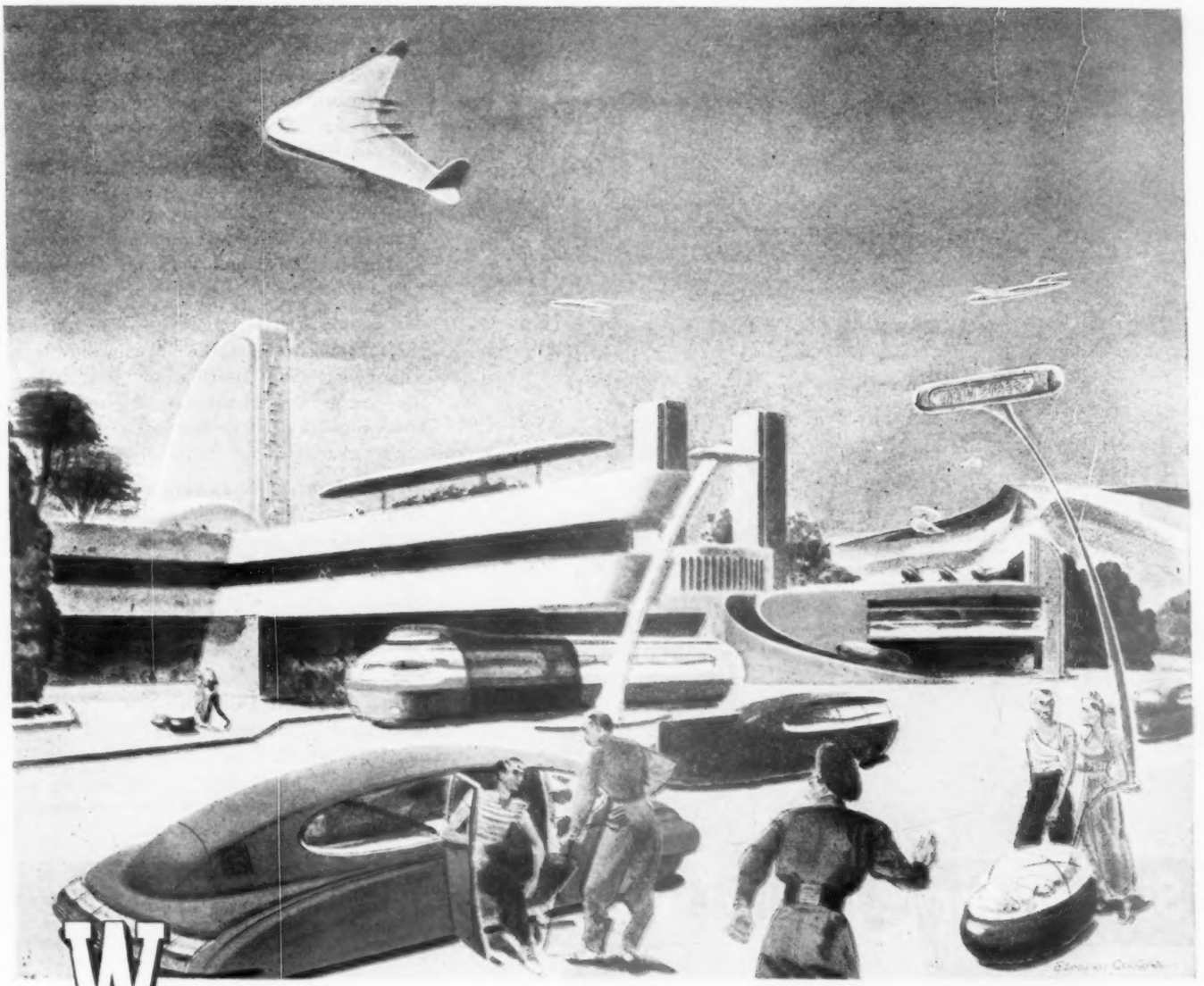


That industry may compete

The same tools that help win wars will lend new skill to the creative hand of postwar industry. Tomorrow these tools will produce those wanted things which a strife-weary world has long gone without . . . and produce them at less cost that more may enjoy them.

J. H. WILLIAMS & CO.,
Buffalo 7, N. Y.

WILLIAMS
DROP-FORGINGS AND DROP-FORGED TOOLS



What IS this world coming to?

FLYING WINGS . . . tear-drop cars . . . television . . . electronics . . . plastic houses . . . you can paint your own dream and your guess is apt to be as good as the next fellow's.

Frankly, we don't believe Main Street is going to be transformed into a comic book conception of the planet Saturn as soon as the ink dries on the peace treaties. Sure, we are going to see some pretty quick changes . . . in homes, on farms, in offices, in plants. Changes for the better — better living, better working, better playing — but when, or how soon, a streamlined Utopian world will be complete is just guesswork.

Anyhow, "when" is not the point. The important thing is that we *are* on the way. Progress is already being made . . . and in that progress all of us here at Acushnet expect to have a part.

What we've learned in making materials of rubber and synthetic rubber for the uses of war is going to come in mighty handy later on. Perhaps it's going to help your engine to run a little smoother, or your pump to operate a little more efficiently, or your business machine to wear longer, or your radio to sound sweeter, or your chair to be more comfortable.

Whatever it is and whenever we start, it's all right with us — *after* we finish our war job. And, although rubber parts made by Acushnet may not always be in evidence in the article you buy, there will be many used by many manufacturers who will be turning out many things for your comfort, pleasure* and convenience. . . . Acushnet Process Co., New Bedford, Mass.

** Pleasure? — well, come peace, make a date with yourself to tee off with an Acushnet Titleist Golf Ball — post-war model.*

BUY WAR BONDS — KEEP AMERICA FREE

In rubber, remember the name — **ACUSHNET**



Sinews for Worthington "Blue Brutes"

"BLUE BRUTES," Worthington calls them. They're the line of rock drills, paving breakers, other construction air tools and portable air compressors. The work they do is as tough and shattering as any found in industry.

Fastening such equipment is no job for ordinary nuts. They couldn't last. But Elastic Stop Nuts are O.K. They stay put, come what may in the line of socks and vibration. That's why "Blue Brutes" are fastened with them.

The reason Elastic Stop Nuts hang on like this is found in the elastic collar in their tops. This collar wraps itself around the bolt—squeezes in between the threads—presses up, down and all around. The nut can't turn—can't wiggle.

There's no need for locking pins or washers with Elastic Stop Nuts. And they can be taken off and reused without losing their locking ability.

There are countless products that will be safer and last longer—machinery that will need less servicing—when fastened with these nuts. Perhaps you have some such problem now. If so, let us know. Our engineers will gladly share their experience with you and recommend the correct Elastic Stop Nut.

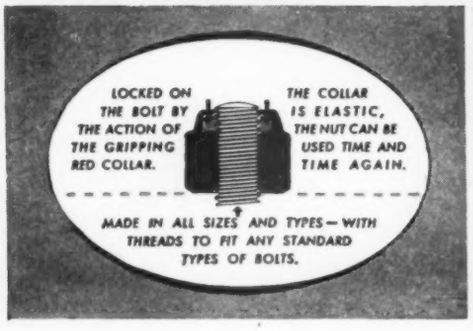
Note: ESNA nuts are also used on Worthington centrifugal pumps.

TAKE IT FROM THE MAN WHO KNOWS

In the past, one of our most serious difficulties was the loosening of the nut fastenings on our rock drills, paving breakers, and other compressed air operated construction tools. Some of these tools operate at high piston speeds with resultant vibratory stress on the rods and nuts that hold the component parts together.

Our present use of ESNA Elastic Stop Nuts for the major fastenings on this equipment is the result of exhaustive tests of many types of fasteners. It was found that these nuts hold tight under extremely severe conditions of service and that they retain their satisfactory locking effectiveness even after long periods of operation in the field.

Engineer in Charge Contractors' Air Tools and Rock Drills Worthington Pump and Machinery Corporation





ESNA

TRADE MARK OF
ELASTIC STOP NUT CORPORATION OF AMERICA

ELASTIC STOP NUTS

Lock fast to make things last

UNION, NEW JERSEY, AND LINCOLN, NEBRASKA

Good for Another 30,000 Miles?



SURE the tire is smooth. But if it hasn't been abused in service, it's good for 2 or 3 recap jobs. With reasonable care, by holding down driving speeds, by easy starting and stopping, and maintaining correct air pressures, it can deliver double the mileage for which it was originally intended.

You can thank America's skilled tire engineers for this doubling of tire life. For it is more than just a matter of recapping materials and application.

In your prewar tires, rubber company engineers, designed and built in *extra* quality and safety in sidewalls, the inner cords (carcass) and the bead. It is only because these constructions have generally stood up that it's possible for millions of motorists to continue driving with 4 and 5 year and even older tires.

Bead construction might have been made cheaper, but tire manufacturers purposely set high standards of workmanship and specified high quality steel wire for bead making.

And close collaboration between rubber engineers and National-Standard has resulted in reducing bead failures to a minimum.

Since the early days of the rubber industry, National-Standard has pioneered the development of better wire, improved wire construction and the design and building of wire applying machinery to improve and speed up production.

National-Standard's long experience naturally lead to the development of special wire for the improved service and longer life of many other rubber products, including many types of flexible hose, V-belts, conveyor belts, aircraft ignition cable shielding, and coverings for electrical cables.

National-Standard's engineering and research staffs are working on new uses and constructions of wire to improve scores of other products. Perhaps these developments can benefit your products—why not write and find out?

BACK THE ATTACK
—BUY MORE
WAR BONDS

NATIONAL STANDARD *Company*

Divisions of National-Standard Company

NATIONAL-STANDARD
Niles, Mich.
TIRE WIRE, FABRICATED BRAIDS AND TAPE

ATHENIA STEEL
Clifton, N. J.
COLD ROLLED, HIGH-CARBON SPRING STEEL

WAGNER LITHO MACHINERY
Hoboken, N. J.
LITHOGRAPHING AND SPECIAL MACHINERY

WORCESTER WIRE WORKS
Worcester, Mass.
ROUND STEEL WIRE, SMALL SIZES

TAKE A TIP.....



NOT A TAP...



to get instant, accurate Temperature Readings!



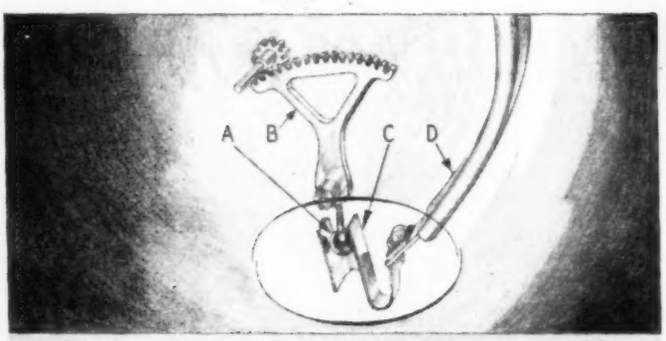
Exclusive Ball-and-Trough linkage gives Foxboro Dial Thermometers positive pointer movement, up and down the scale

When the pointer on a Foxboro Dial Thermometer points to any figure on the scale, *it always means just what it says.* And it takes no tapping of the dial face to make it tell the truth!

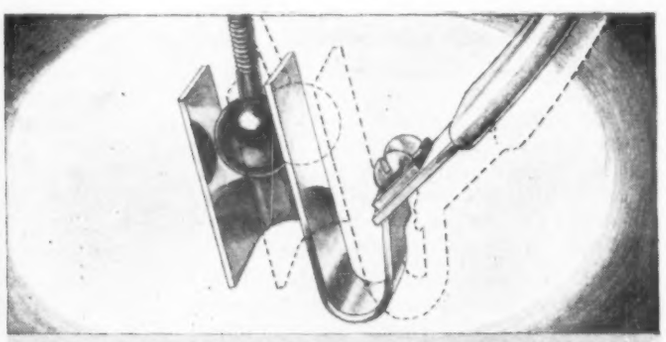
The exclusive Ball-and-Trough linkage in this better-engineered instrument eliminates lost motion . . . insures positive positioning of the pointer, no matter which way temperatures move. What's more, it also eliminates all the angularity errors of lever-type linkages . . . gives uniform, accurate calibration over the entire scale!

Add to this *inherent* accuracy, the *accuracy-in-use* features of Foxboro Dial Thermometers: rugged, all-metal construction — accessible mounting of the indicator anywhere up to 200 feet from the bulb — airplane-type dials that can be accurately read from a distance of 20 feet. You get a lot of extra value, at no extra cost!

Write for full details in Bulletin 148-7. **The Foxboro Co., 178 Neponset Avenue, Foxboro, Massachusetts.** Branches in principal cities.



Circled is the exclusive Foxboro Ball-and-Trough linkage. A stainless steel ball (A) integrally connected with the gear segment (B) slides, practically without friction, in a chromium-plated trough (C) attached to the Bourdon Tube (D).



Enlarged view of Foxboro Ball-and-Trough. Dotted lines show typical change in position corresponding with change in temperature. This linkage provides constant, tangential point-contact . . . eliminates lost motion and angularity errors.

FOXBORO DIAL THERMOMETERS

REG. U. S. PAT. OFF.



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Westinghouse distributors carry a complete stock of luminaires—ready for prompt delivery. Used for either individual or continuous strip installations—ceiling or suspension mounted—they provide a wide range of high intensity illumination . . . free from shadows and glare.

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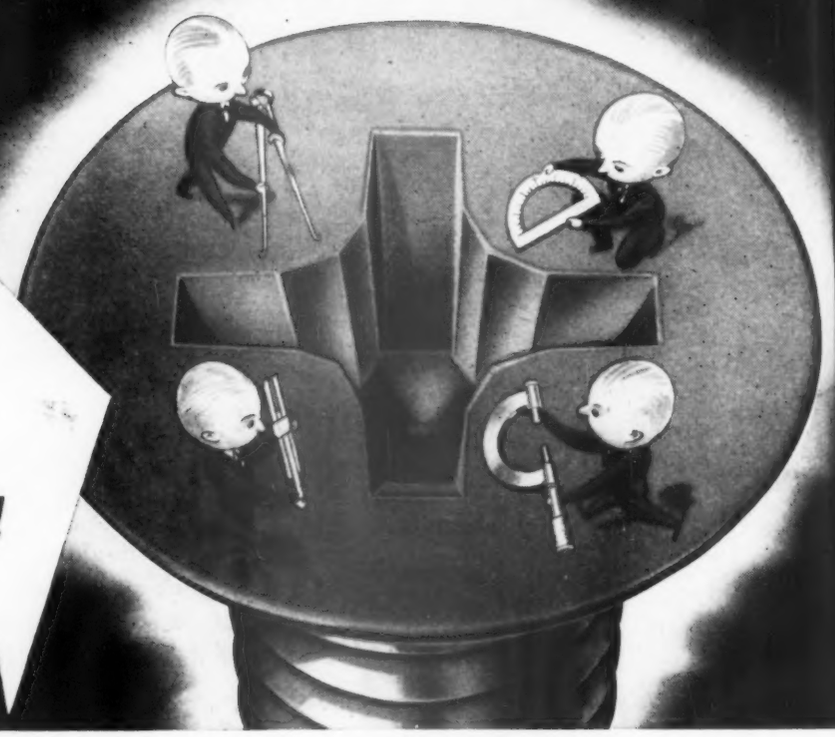
This bulletin—B-3332—lists basic types of Westinghouse Commercial Fluorescent Luminaires. It presents complete application data . . . dimensions . . . features . . . methods of mounting . . . ordering information. Ask your nearest Westinghouse distributor for a copy today. Or, write Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., Dept. 7-N.

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. . . . . AND THE PHILLIPS RECESS HAS WHAT IT TAKES!

TAKE A LOOK at the center corners of the Phillips Recess above – and get a picture of some real screw engineering!

THESE CORNERS *aren't square!* They're rounded into a series of 16 flat planes. It's these flat planes that *hold* drivers in the Phillips Recess so well.

THEN NOTICE how the 4 wings and the 16 flat planes are angled. It's the scientifically determined degree of these angles that eliminates fumbling starts . . . makes it possible to use full turning power . . . makes it hard to burr Phillips Head Screws, and reduces wear on Phillips Bits and Drivers.

FOR ANOTHER INSTANCE of Phillips engineering ingenuity, note the depth of the Phillips Recess. It's not too deep . . . not too shallow. It's just the right depth to give Phillips Recessed Head Screws the strength to stand up under the heaviest driving pressures. Just the right depth to give maximum turning power with a minimum of effort . . . to keep drivers in proper alignment with screws!

COST LESS! Switch to screws with the scientifically engineered Phillips Recess — they cost less because they help you produce more! Available in any head style, type, or size.



PHILLIPS *Recessed Head* SCREWS

WOOD SCREWS · MACHINE SCREWS · SELF-TAPPING SCREWS · STOVE BOLTS

TO MAKE WARTIME QUOTAS AND PEACETIME PROFITS

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Easier Driving: Turning power is fully utilized. Workers maintain speed without tiring.

Better Fastening: Screws are set-up uniformly tight, without burring or breaking of screw heads. The job is stronger, and the ornamental recess adds to appearance.



IDENTIFY IT!



Center corners of Phillips Recess are rounded . . . NOT square.



bottom of Phillips Recess is nearly flat . . . NOT tapered to a sharp point.

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Atlantic Screw Works, Hartford, Conn.
The Bristol Co., Waterbury, Conn.
Central Screw Co., Chicago, Ill.
Chandler Products Corp., Cleveland, Ohio
Continental Screw Co., New Bedford, Mass.
The Corbin Screw Corp., New Britain, Conn.
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"HE SAYS HE CAN THANK PURDY FOR HIS PRESENT FLUID CONDITION."

Purdy can get *you* all set, too, for changes looming up. First thing we suggest is you stop right now on the stocking up of war steels. Depend on our inventory of over 6,000 items. Then when war contracts terminate, depend on us to get you set for civilian production. No matter whether your contract ends in a matter of weeks or a matter of months, you'll know that you won't get caught with heavy stocks you can't use.

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When virtually every load is tagged for war production, efficient handling becomes an obligation—one you'll discharge on all counts with Yellow Strand Braided Wire Rope Slings.* *Safety?* The strength of this patented sling lies in tough Yellow Strand Wire Rope, so braided that it gains marked flexibility . . . conforms readily to any product . . . grips it gently but securely. *Speed?* Light weight and high kink-resistance make the sling easy to carry, attach and remove. *Economy?* A compact braided sling conserves manpower and materials, compared with bulky types. Even when lifting heavy locomotives, turbines, pressure towers or weapons, a Yellow Strand Braided Sling will require fewer men —and less steel. And for such lighter lifts as jigs, tools, drums or crates, a Yellow Strand Sling offers relief from the fiber shortage. Fitting material-handling equipment to your specific job is the function of Broderick & Bascom's specialized Sling Engineers. Investigate today!

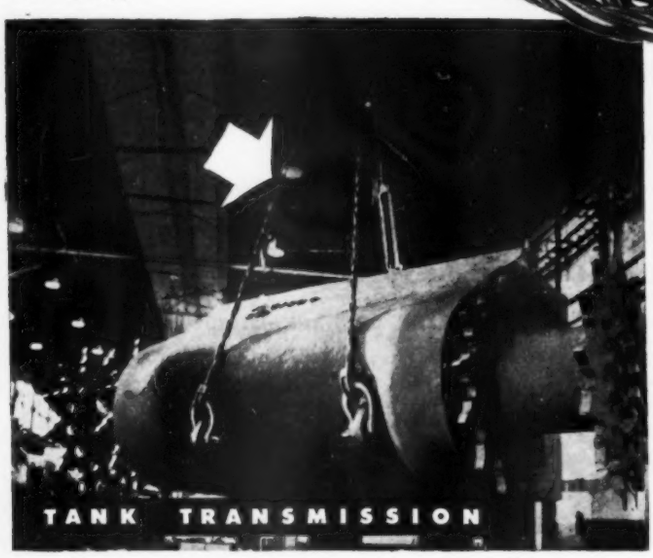
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Full depth thread, accurately cut, results in pressure-tight joints. Pipe enters easily. Uniform thickness. Sizes clearly marked . . . ¼" through 4".

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Speed up installation because deep sockets save time formerly required to cut pipe to exact length. Socket supports pipe and allows self-alignment. No machining of pipe necessary for fit. ASSURED WELDABILITY. Sizes clearly marked . . . ¼" through 4".

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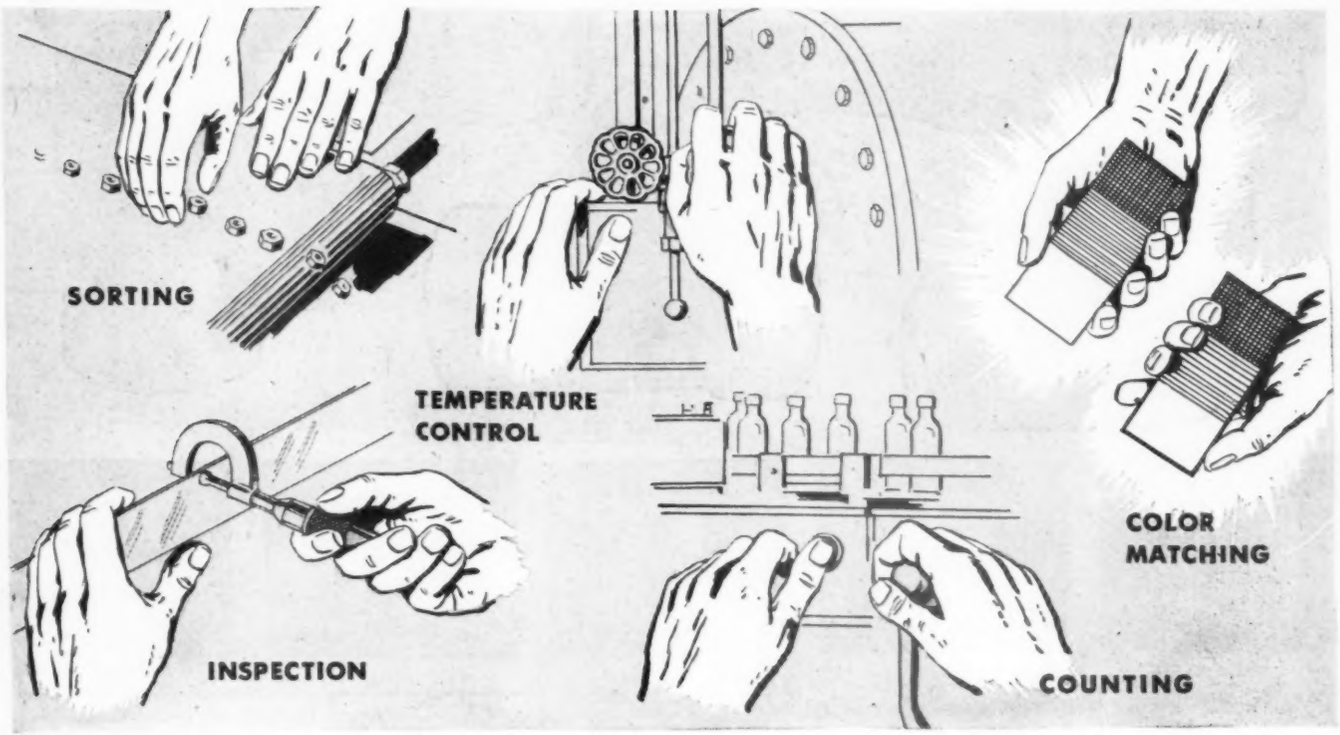
Houston, Texas Office: 1005 Sterling Building

How Many HANDS *Are Wasted?*

In the illustration below five pairs of hands are busily engaged in five typical factory operations. Each instance is an example of *waste labor! Electronic equipment* can do these jobs faster, cheaper, more accurately—and release those hands for *more productive labor*—with the end result of lower production costs . . . lower consumer prices . . . more output—*and more jobs!*

These are no dreams of an Utopian electronic future. They are hard realities in war-busy plants today. Countless other applications—including those shrouded in military secrecy—show where and how the science of electronics will help postwar manufacturers boost *low-cost* production and better product quality.

If you're interested, there is a man in *your* town you should see . . .



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YOUR LOCAL UTILITY pays for the services of a skilled electrical engineer, abreast of the latest electronic developments, to help you solve many production problems. He's the man who can help you determine *where* and *how* electronic equipment can profitably be put to work in *your* plant.

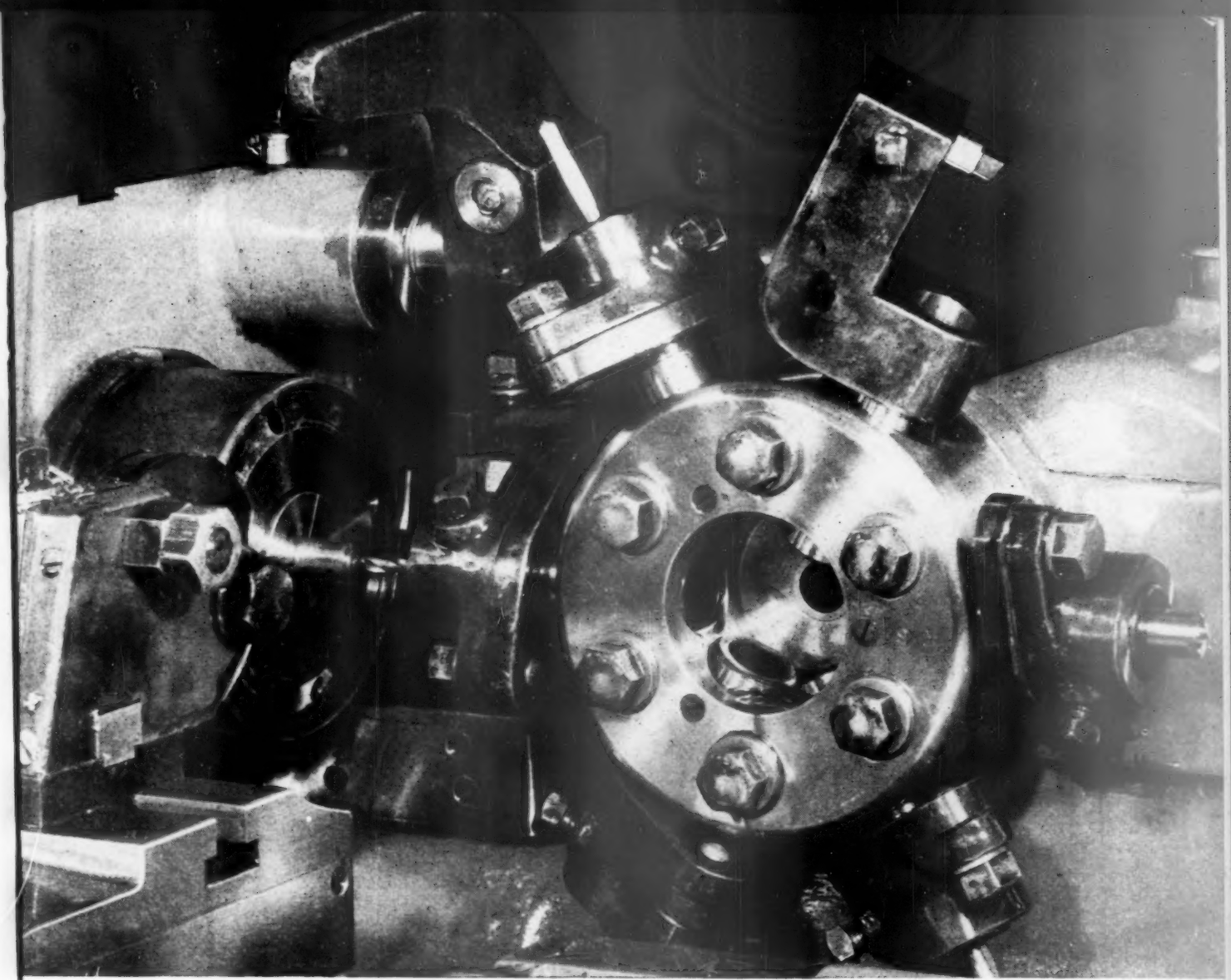
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And—when Victory brings modernization day to hand—we hope you'll remember Roebling. The wire specialists. A single source of all wires and cables for the electronic cost-cutters, better lighting, better air conditioning and better power distribution methods the war has evolved.

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Brown & Sharpe Screw Machine Tools have the characteristics that give superior performance.

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Permite Aluminum Paints are now obtainable for a long list of inside and outside painting applications, under WPB Amended Orders. And as necessary wartime restrictions are further lifted, the complete line will again become available.

See your Permite Aluminum Paint Distributor, or write us for a copy of WPB order giving complete list of permitted uses.

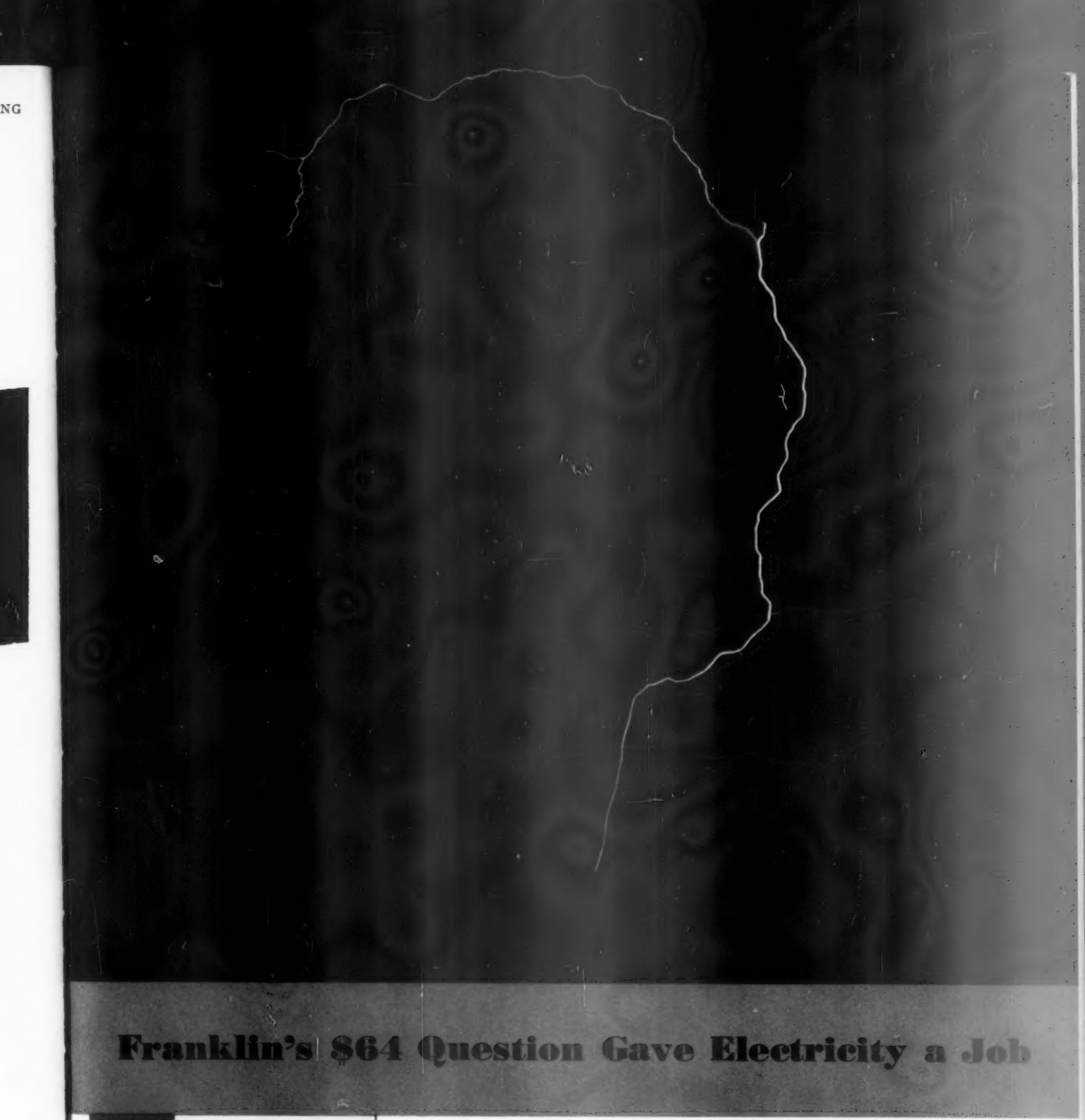
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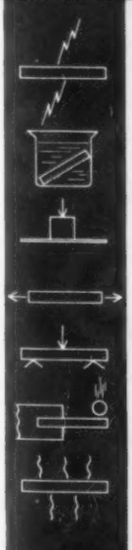
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HIGH DIELECTRIC STRENGTH

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COMPRESSIVE STRENGTH

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STABLE OVER A
WIDE TEMPERATURE RANGE

Many More Properties—Combined

LIGHTNING streaked through ages, feared but unchallenged. Then to Benjamin Franklin it flashed the answer to a question that unlocked the future of electricity.

Technical plastics, Synthane for example, have already answered many $1 to $64 questions for people who make things. And may for you. The question, of course, should come before the answer—for only you know, as *you* do, what your requirements are. If whatever you are working on suggests a material of excellent electrical insulating characteristics, resistance to corrosion, mechanical strength, stability at usual temperatures, easy machineability, or a variety of other inter-related properties, our type of technical plastics may readily be indicated. Our latchstring is always out to any inquiry.

Synthane Corporation, Oaks, Penna.

SYNTHANE TECHNICAL PLASTICS

SHEETS • RODS • TUBES • FABRICATED PARTS **SYNTHANE** MOLDED-LAMINATED • MOLDED-MACERATED

Plan your present and future products with Synthane Technical Plastics

A comparison of SYNTHANE TECHNICAL PLASTICS with certain metals, debunking a popular notion that plastics being "magic" can be used indiscriminately

IT IS CHARACTERISTICALLY HUMAN to back a winner . . . to ascribe precipitately to vitamins or sulfa drugs or plastics more powers and claims than sober research can keep up with. Plastics have their possibilities . . . and their limitations. Good design is the reward of knowing both.

Plastics are doing many jobs that metals used to do, especially since certain critical metal shortages have cropped up. But, basically, plastics are *not* substitute materials. Correctly applied, they should and do stand solely on their own merits.

INTERESTING COMPARISONS TO PROVE the point can be made between our type of plastics—Synthane—and certain metals. Synthane is made by applying heat and pressure to paper or fabric impregnated with thermo-setting resins. It is non-metallic, a fact which should at once suggest uses fundamentally different from those of metals. Actually, Synthane is an excellent electrical insulator, and so you find it in hundreds of radio and electrical products and applications, not in place of metal, but to insulate metal. That does not imply Synthane cannot replace metal. As a matter of fact, Synthane has taken over for metals in pulleys, bearings, panels, structural members, scales, dials. The reasons can usually be traced to one or a combination of the many properties of Synthane technical plastics.

ONE OF THE PRINCIPAL REASONS at present is light weight. Synthane has a specific gravity ranging from 1.20 to 1.70, about half that of aluminum, less than magnesium. So in many unstressed parts for aircraft Synthane is a logical consideration.

SYNTHANE LAMINATED PLASTICS GENERALLY have lower mechanical strength than metals for a given cross section. For example, an approximate comparison might read like this:

	Tensile Strength (p.s.i.) ultimate	Compressive Strength (p.s.i.)
Alloyed Aluminum	16,000–60,000	9,000– 47,000 (y)
Brass	40,000–80,000	28,000–126,000 (u)
Cast Iron	16,000–45,000	80,000–200,000 (u)
Synthane	8,000–12,000	30,000– 50,000 (u)

(y—yield strength
u—ultimate strength)

IT IS IMPORTANT, HOWEVER, TO REMEMBER that on a *weight* basis, Synthane may be stronger though redesign of a part for plastics may be necessary.

HARDNESS IS A PROPERTY in which another interesting comparison of Synthane with metals can be made. Brinell hardness, tested with 500 Kg. load, 10 mm ball, shows approximately these values: Alloyed aluminum 45–110, Brass 95–150, magnesium (drawn annealed) 29, annealed cast iron 77, Synthane 24–40.

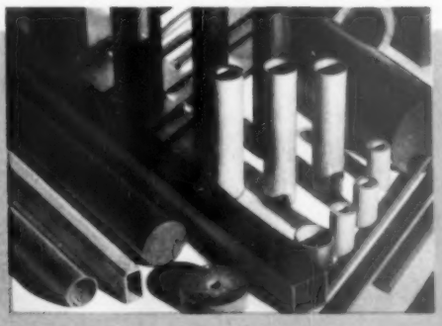
BEHAVIOR UNDER TEMPERATURE CONDITIONS is characteristic of Synthane's non-metallic composition. For instance, whereas the thermal conductivity of aluminum alloys may range from .20 to .54 calories per second per square centimeter per centimeter of thickness per degree C., Synthane's thermal conductivity is about .0005 to .0008. The coefficient of thermal expansion of Synthane is about .0000140 inches per inch per degree F., approximately the same as alloyed aluminum, slightly more than pure aluminum, copper, brass.

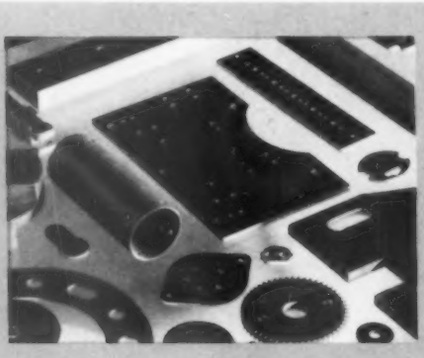
CORROSION RESISTANCE IS A SUBJECT of such complications as to temperature, degree of concentration, and type of agent that any comparison with metals would necessarily be lengthy. Synthane does resist corrosion from water, many acids, oils, and salts, and to a greater or lesser extent than metals depending on the metal with which it is compared and the corrosion conditions. Synthane is extensively used as a corrosion resistant material.

APART FROM ITS PHYSICAL, CHEMICAL, electrical and chemical properties, Synthane may be easily and quickly machined by ordinary shop methods, a point which may occasionally influence selection when other factors are the same. And, just as metals are cast for economy in large quantities, so Synthane is available in two molded forms, molded-laminated and molded-macerated, for economy of duplication.

OBVIOUSLY, IN CERTAIN CASES there can be no question of whether to use Synthane plastics or a metal such as when the material must be an electrical conductor or an electrical insulator. In other cases, weight or strength may decide, or corrosion resistance, resilience, hardness, machinability. Or as often happens, the decision may rest upon the extent to which the material required meets many combined specifications. Synthane technical plastics are usually more desired for their combination of properties than for any one specific property for which another specific material or metal may be the only logical answer.







SYNTHANE

PLAN YOUR PRESENT AND FUTURE PRODUCTS WITH SYNTHANE TECHNICAL PLASTICS · SHEETS · RODS · TUBES · FABRICATED PARTS · MOLDED-LAMINATED · MOLDED-MACERATED

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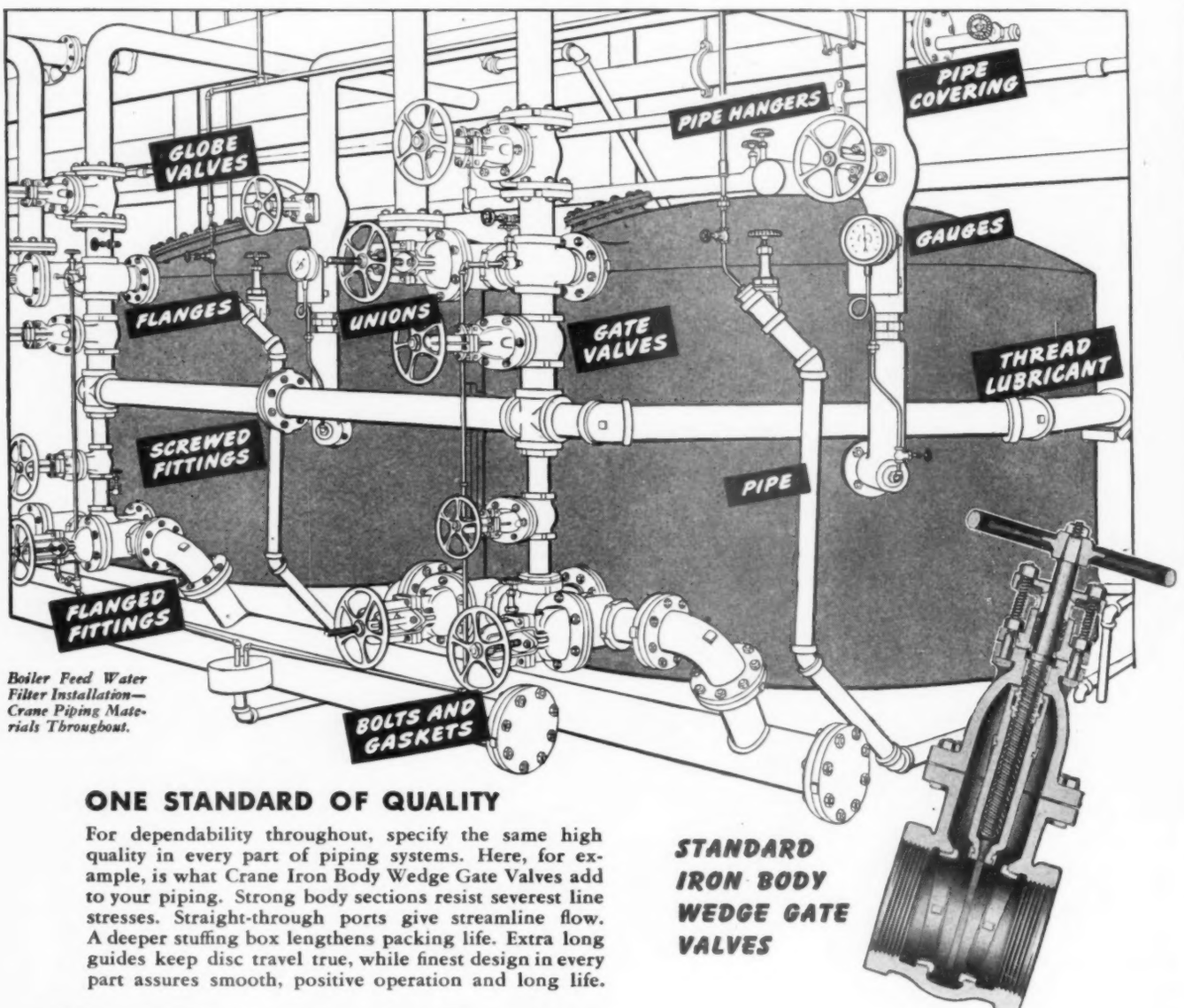
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Valves—fittings—pipe—fabricated assemblies—and piping accessories—for power or processing lines—high, moderate, or low pressure—all your needs for any installation are available from a single source: Crane. Just name the fluid to be handled—your Crane Branch offers the world's greatest selection of quality materials—in brass, iron and steel—for every piping service.

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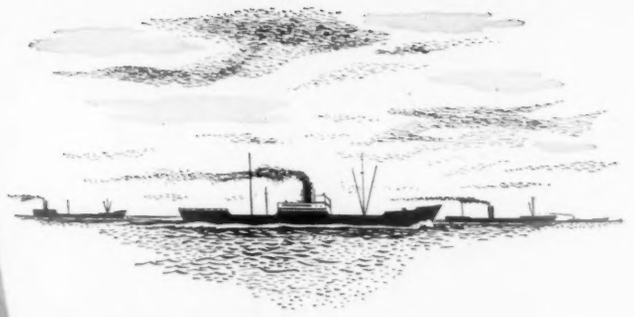
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. . . the 17 BILLION board feet of lumber used for shipping purposes this year is more than *triple* the amount so used three years ago . . .

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The "Drum" Test, in laboratory, pre-proves ability of new wooden box designs to "take it" under actual shipping conditions.

Modern, engineered wooden boxes are the indispensable shipping containers . . . in war just as they are in peace.
Up-to-date planners of peace-time packages remember these facts in their post-war plans now! *Wood* packaging is *good* packaging!

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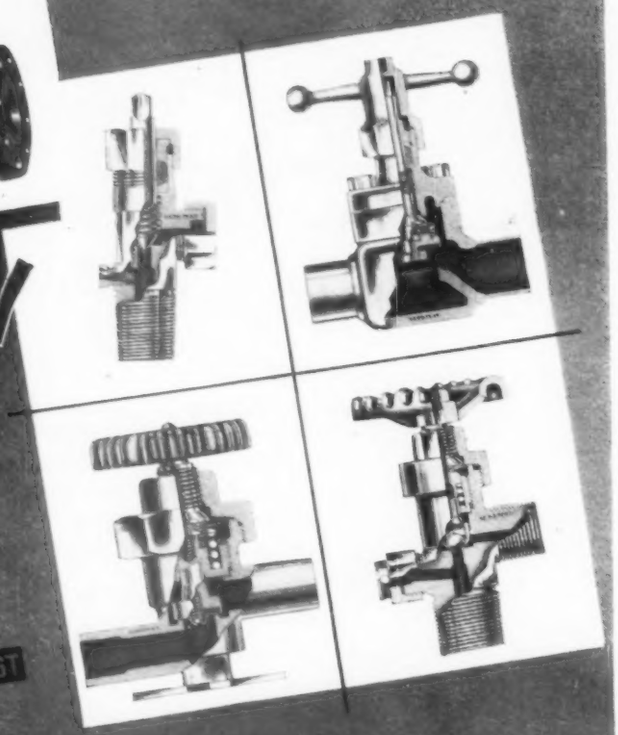
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Descriptive 32-page Marine Valve Catalog No. 43-M on request.

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In molding rubber parts, we make a specialty of *precision*. Among the Armstrong rubber products molded to close tolerances are seals, piston cups, valve seats, and diaphragms. We'll gladly discuss your needs.

In addition to producing molded mechanical rubber parts, Armstrong is the originator and largest producer of cork-and-synthetic-rubber and cork-and-rubber compositions. These materials are available in the form of sheets, roll goods, die-cut parts, or extruded rings.

For more information about Armstrong's synthetic rubber, cork-synthetic, and cork-rubber products, write for a free copy of the new, illustrated 16-page booklet, "Gaskets, Packings, and Seals." Address Armstrong Cork Company, Industrial Division, 7210 Arch Street, Lancaster, Penna.

Armstrong's Industrial Products

GASKETS, PACKINGS, SEALS, and **MECHANICAL SPECIALTIES** of Cork, Synthetic Rubber Compounds, Cork-and-Synthetic-Rubber Compositions, Cork-and-Rubber Compositions, Fiber-Type Materials, and Rag Felt Papers.

RESILIENT SURFACINGS (for desks, counters, etc.) and **FLOORINGS** (for buses, railway cars, etc.) of Linoleum, Linowall, Linotile (Oil-Bonded), Airoflor, Armoflor, Asphalt Tile, Automat, Cork Tile, Monowall, and Traffex.

TEXTILE MILL SUPPLIES - SHOE MATERIALS ADHESIVES - GLASS INSULATORS

. . . These are only a few of the more than 360 products of the sixteen plants of the Armstrong Cork Company.

ARMSTRONG CORK COMPANY
INDUSTRIAL DIVISION

FOR THOSE "TOUGH JOBS"

WHERE THE SURROUNDING ELEMENTS ARE DESTRUCTIVE OR HAZARDOUS

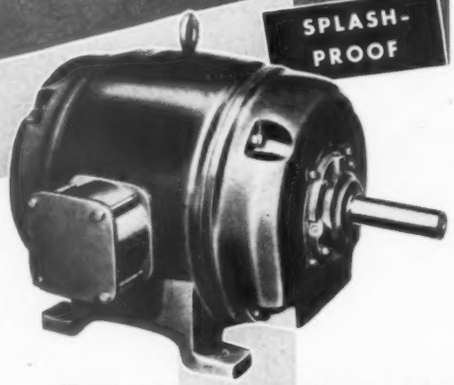
use Wagner MOTORS

TOTALLY-ENCLOSED



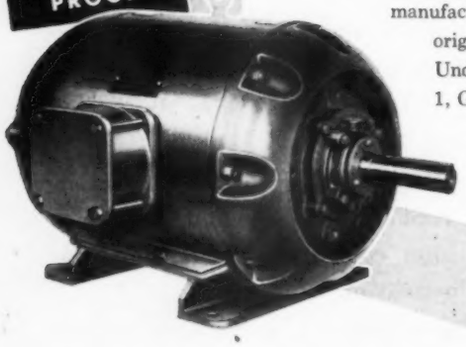
Wagner CP totally-enclosed fan-cooled motors are designed to operate under adverse conditions in atmospheres that contain dust, dirt, abrasives, steel chips, filings, acid fumes, and other harmful elements.

SPLASH-PROOF



Wagner splash-proof, squirrel-cage polyphase motors are built to operate dependably in locations where they are subject to splashing water, oil, or other liquids. They are widely used in unprotected outdoor locations, being designed with complete self-protection against rain, snow and sleet.

EXPLOSION-PROOF



Wagner explosion-proof polyphase motors are designed to operate in locations where "flammable volatile liquids, highly flammable gases, mixtures or other highly flammable substances are handled or manufactured, used or stored in other than original containers." Approved by the Underwriters' Laboratories for Class 1, Group D hazardous locations.

CHEMICAL-PROOF



Wagner chemical-proof motors are of totally-enclosed, fan-cooled construction and designed to resist the action of acids, fumes, moisture and other harmful elements encountered in chemical manufacturing. A moisture-proof and dust-tight conduit box protects the motor against dust, fumes, or moisture. Special drain plugs in end-plates and conduit box are provided for removing any condensation from the motor or conduit box.

MOTORS
TRANSFORMERS
UNIT SUBSTATIONS
INDUSTRIAL BRAKES
BRAKE LINING

M44-8A

***Write* FOR BULLETINS MU-182 and MU-183**

Everyone interested in electric motors should have Wagner Bulletins MU-182 (Wagner Polyphase Motors) and MU-183 (Wagner Single-Phase, Direct-Current, and Small Polyphase Motors). Helpful information also will be found in Bulletin MU-26A (Instructions for Installing and Operating Wagner Polyphase Motors)

ARMY E NAVY

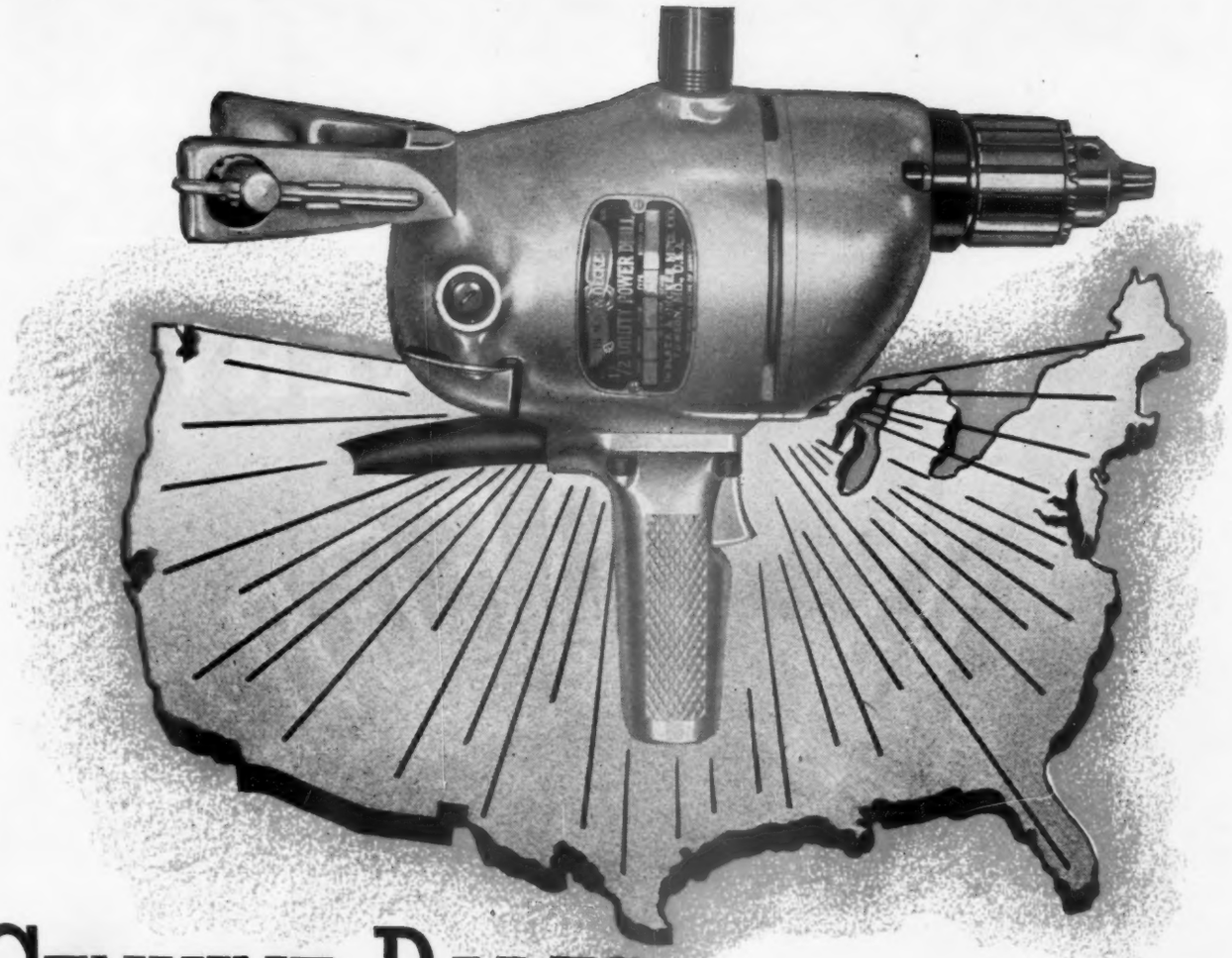
NATIONAL SECURITY AWARD

Wagner Electric Corporation

ESTABLISHED 1891

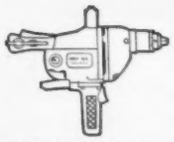
6360 Plymouth Avenue, St. Louis 14, Mo., U. S. A.

ELECTRICAL AND AUTOMOTIVE PRODUCTS

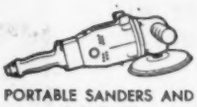


GENUINE PARTS

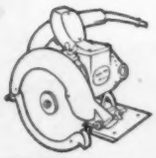
for Black & Decker Tools are never far away



ELECTRIC DRILLS AND TAPPERS



PORTABLE SANDERS AND GRINDERS



ELECTRIC QUICK-SAWS AND SHEET METAL SHEARS



SCREW DRIVERS AND NUT RUNNERS

Factory Service Branches in 25 Cities* Help Keep Your Tools on the Job

Here's some of the extra satisfaction you get with every Black & Decker Electric Tool. If and when repairs are needed, expert service is quickly available . . . through company-owned Factory Service Branches in the 25 cities listed below.

These Branches carry genuine Black & Decker parts in stock . . . use no substitutes or makeshifts . . . and that's mighty important. For example: Genuine Black & Decker armatures, wound and dynamically balanced with our factory precision, can help you avoid burnouts that frequently result from hit-or-miss rewinding jobs.

This Factory Service, all over the map, is one of many reasons why Black & Decker Tools are a better buy . . . for all such jobs as drilling and tapping, screw driving and nut running, sanding and grinding, sawing wood and cutting sheet metal.

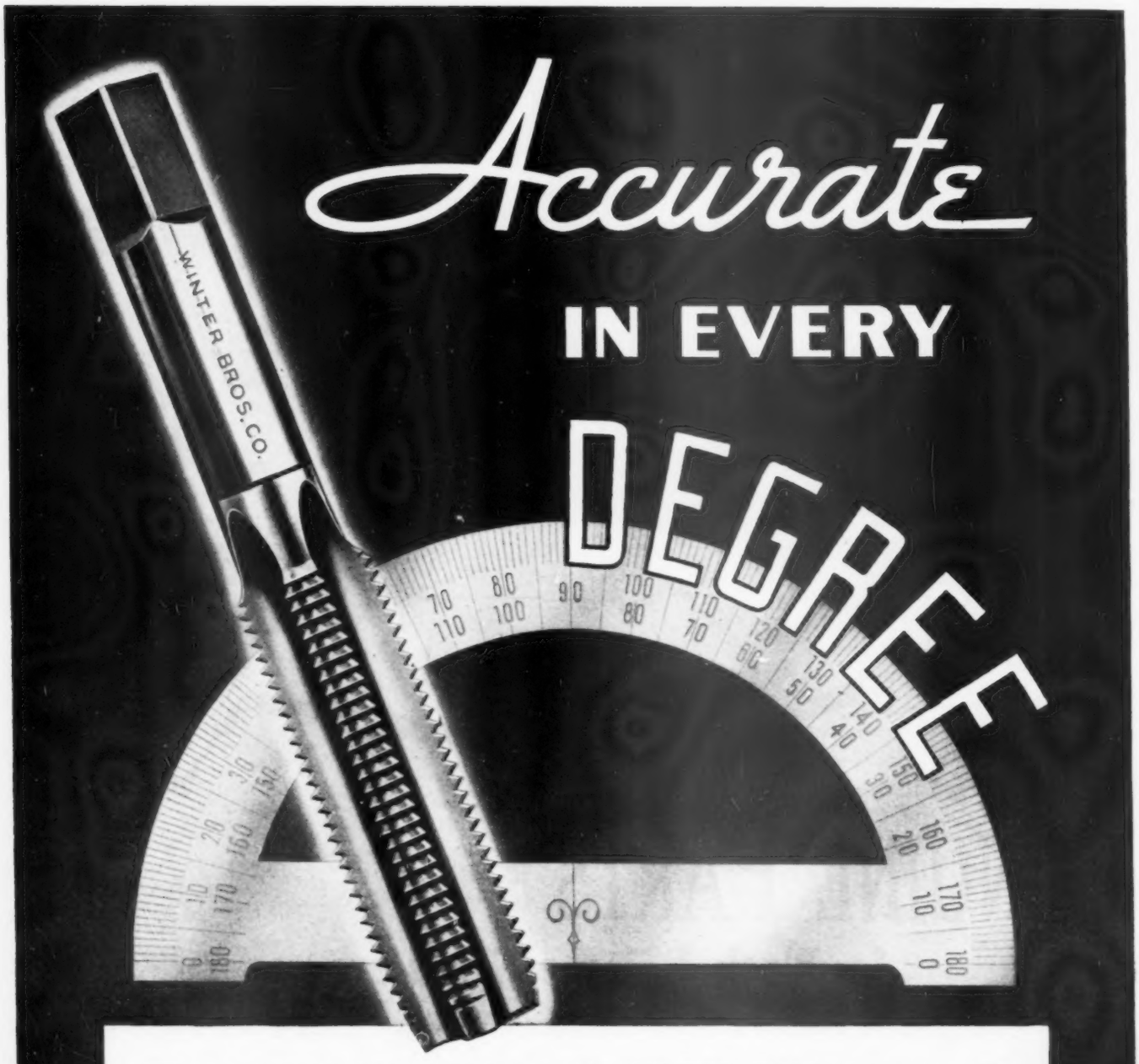
For help on any tooling problem, see your nearby Black & Decker Distributor. Get the extra satisfaction that comes with every product of Black & Decker—world's largest manufacturer of portable electric tools. The Black & Decker Mfg. Co., 664 Pennsylvania Ave., Towson 4, Maryland.

*FACTORY SERVICE BRANCHES: Atlanta, Ga.; Baltimore, Md.; Boston, Mass.; Buffalo, N. Y.; Chicago, Ill.; Cleveland, Ohio; Dallas, Texas; Denver, Colo.; Detroit, Mich.; Indianapolis, Ind.; Kansas City, Mo.; Los Angeles, Calif.; Memphis, Tenn.; Minneapolis, Minn.; Newark, N. J.; New Orleans, La.; New York, N. Y.; Philadelphia, Pa.; Pittsburgh, Pa.; San Francisco, Calif.; Seattle, Wash.; St. Louis, Mo.; Towson, Md.; Toronto, Ont.; Montreal, Que.

LEADING DISTRIBUTORS EVERYWHERE SELL

Black & Decker

PORTABLE ELECTRIC TOOLS



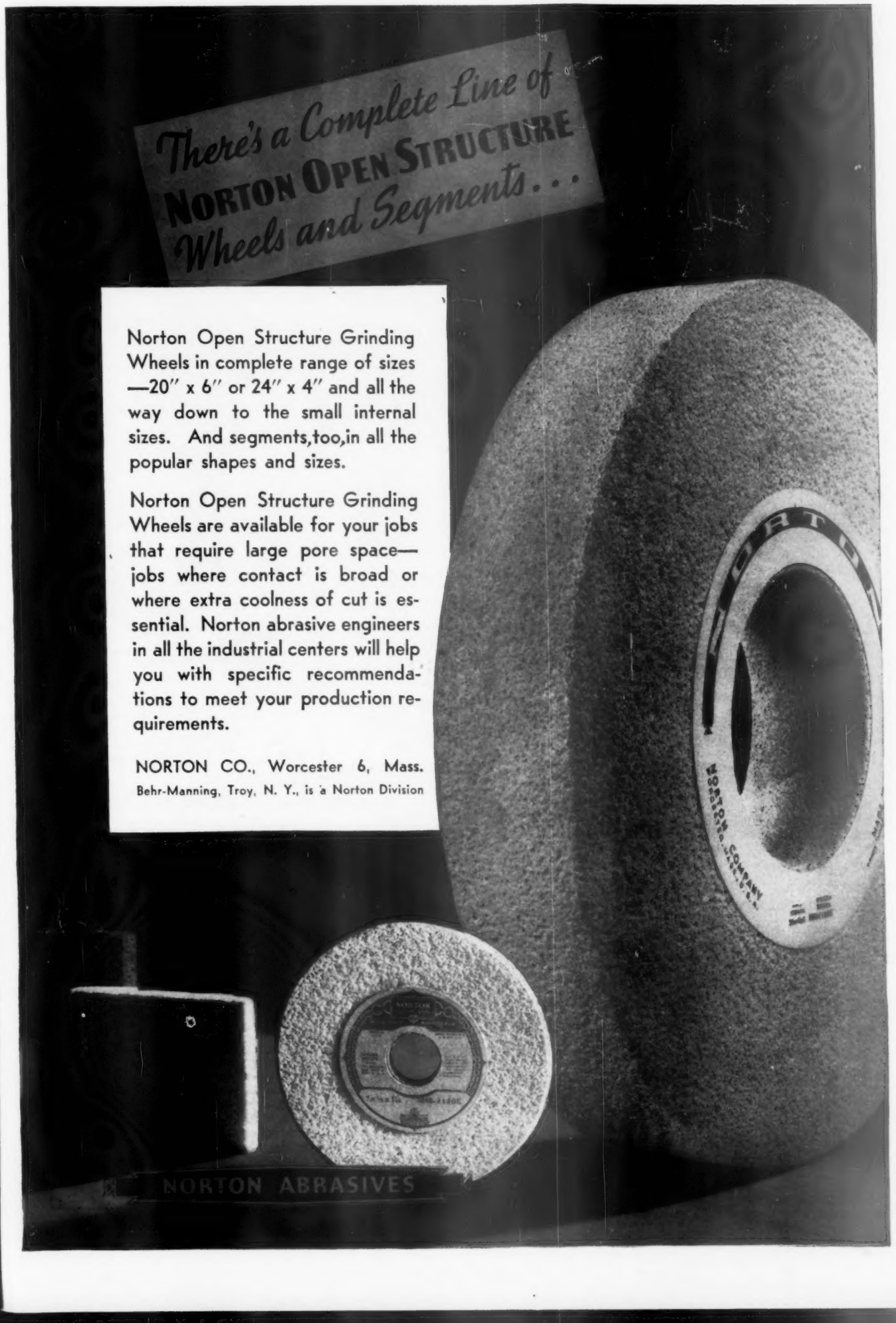
The degree of Accuracy that made WINTER TAPS the approved threading tools of a host of Nationally known manufacturers will serve you equally well on all YOUR tapping jobs.
Give them the care you would any other precision tool and they will be cutting good threads long after you would normally expect to discard them.

A DIVISION OF THE NATIONAL TWIST DRILL & TOOL CO., ROCHESTER, MICHIGAN

Winter Brothers

COMPANY
BRANCH STORES

Wrentham, Massachusetts, U.S.A.
SAN FRANCISCO CALIFORNIA - CHICAGO ILLINOIS - DETROIT, MICHIGAN


There's a Complete Line of
NORTON OPEN STRUCTURE
Wheels and Segments...
Norton Open Structure Grinding Wheels in complete range of sizes —20" x 6" or 24" x 4" and all the way down to the small internal sizes. And segments,too,in all the popular shapes and sizes.
Norton Open Structure Grinding Wheels are available for your jobs that require large pore space—jobs where contact is broad or where extra coolness of cut is essential. Norton abrasive engineers in all the industrial centers will help you with specific recommendations to meet your production requirements.
NORTON CO., Worcester 6, Mass.
Behr-Manning, Troy, N. Y., is a Norton Division
NORTON ABRASIVES

WALWORTH PIPE WRENCHES



THE WALCO PIPE WRENCH
Made to Federal Specifications GGG-W-651a
For Type II Heavy Duty Adjustable Pipe Wrenches
The world's strongest pipe wrench. Equipped with renewable lower jaw. Has only six parts—all forged steel. Sizes 6" to 48".

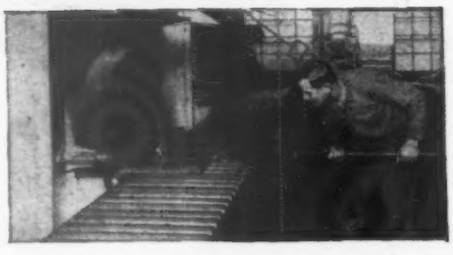
THE WALWORTH GENUINE STILLSON
Made to Federal Specifications GGG-W-651a
For Type I Normal Duty Adjustable Pipe Wrenches
Known throughout the world as the handiest tool in the pipe fitter's kit. Sizes 6" to 48".

THE WALWORTH PARMELEE
Made to Federal Specifications GGG-W-651a
For Type IV Girth Pipe Wrenches
No teeth – grips like a human hand. Won't scratch or mar brass pipe. Particularly useful in making up coils. Made in 4 sizes for 3/8" to 4" I.P.S. Girths in special O.D. sizes available.

These three types of pipe wrenches are manufactured by the Walworth Company, and are noted for their safety, strength, and simplicity of operation.

Walworth, with more than a century of "know-how," also manufactures a complete line of valves, fittings, and pipe. For details see your Walworth distributor, or write on your company letterhead for free copy of Catalog 42.

METALLURGICALLY MODERNIZED



The most advanced metallurgical procedures are employed in the manufacture of Walworth Pipe Wrenches. Forging, heat-treating, and machining operations are performed with modern production equipment under strict supervision. In this way Walworth maintains the high standards of quality that have made Walworth pipe wrenches famous throughout the world.

WALWORTH
valves AND fittings
BOSTON WORKS
KEWANEE WORKS
60 EAST 42nd ST., NEW YORK 17, N.Y.

DISTRIBUTORS IN PRINCIPAL CENTERS THROUGHOUT THE WORLD



Chuck never did stop "scouting" —for you

IN civilian life Chuck worked hard for your Industrial Supply Distributor®. Perhaps you didn't know it then—but many a time it was his hard, persistent scouting for scarce materials and supplies that helped you to keep your production going.

Then Chuck put on the Uniform—but he never did stop scouting for you. Today he is up there in the sky, but when it's over he will be back with your Industrial Supply Distributor —with new ideas for helping you still more.

Give your Distributor every opportunity to help you. Particularly nowadays, channel every order you possibly can through him instead of sending direct to the factory. Twenty orders to the Distributor can be cleared in *one* order to the factory—will be delivered in most cases from stock with less paper work and less congestion on overcrowded rail and trucking facilities.

For your own and *everybody's* benefit—

Telephone your ISD FIRST!

ARMY NAVY

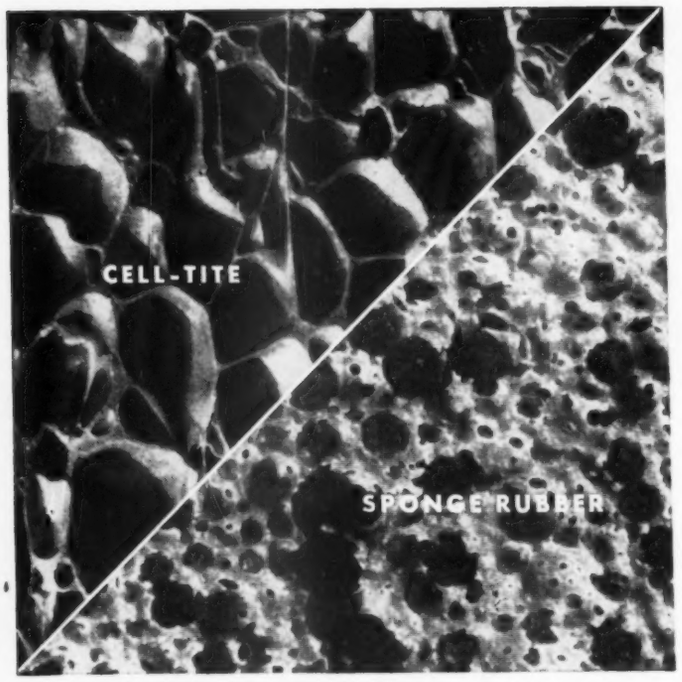
ARMY E NAVY

The CLEVELAND TWIST DRILL COMPANY
1242 EAST 49TH STREET
CLEVELAND

TRADE MARK REG. U. S. PAT. OFF. AND FOREIGN COUNTRIES

30 READE ST. NEW YORK · 9 NORTH JEFFERSON ST. CHICAGO · 650 HOWARD ST. SAN FRANCISCO
6515 SECOND BLVD. DETROIT · LONDON - E. P. BARRUS, LTD.- 35-36-37 UPPER THAMES ST., E.C.4.





CELLULAR RUBBER

THIS VERSATILE MATERIAL SEALS AGAINST MOISTURE, DEADENS SOUND, DAMPENS VIBRATION, INSULATES, AND MAKES PRODUCTS LIGHTER.

Photographs at left (12 diameters) show cross sections of two basic types of cellular rubber. Popular before the war, their wartime record points to even wider usefulness in the improvement of many products for peace.

Sponge and Cell-Tite Rubber are made by expanding natural or synthetic rubber to produce lightweight, resilient materials that form effective barriers against heat, cold, shock, sound, vibration, electricity.

Cell-Tite is non-absorbent — cells are individual, non-connecting, filled with inert gases. Sponge rubber is *absorbent;* cells interconnect.

Cell-Tite may be *hardened* in the process of manufacture. Reputed to be the strongest structural material for its weight commercially produced, Cell-Tite Hard is thermoplastic; may be reshaped after manufacture.

We compound cellular rubbers to meet your exact need and supply you with sheets, strips, slabs, cord or tubing, pads, molded shapes or die-cut pieces.

This company began research and experimentation with cellular rubber in 1923. Prior to wartime restrictions, two of its products — Sponge Rubber and Cell-Tite* — had won widespread use in automobiles, refrigerators and other products in which insulation, sound deadening and vibration elimination were essential. This demand established us as the world's largest producer of this type of material.

Production capacity was expanded to meet war demands; hundreds of formulae originated to meet special requirements of war industries. Methods developed in our laboratories enable us to control cell structure, weight, tensile strength, amount of resistance to heat, chemicals, abrasion, oxidation — to compound cellular rubber in any form to meet any indicated industrial purpose.

Our technical men are ready to work with you now. Some compounds of synthetic and reclaim rubber are available for experimental work and limited civilian manufacture. Tell us your problem; if it can be solved with cellular rubber, we'll help you solve it.

*Trade Mark Registered U. S. Patent Office

SOME USES OF CELLULAR RUBBER

There are hundreds of present uses; hundreds more potential uses. Wherever metal meets metal — in auto and aircraft doors, windows, frames, — strips and formed parts of cellular rubber seal, insulate, lessen sound and vibration. Hard and soft varieties insulate refrigerators and quick-freeze units; are used in the marine industry for life-preservers, life rafts.

Cell-Title Hard is the most efficient and durable material known for flotation purposes. Dielectric properties of Cell-Tite Hard, have led to its wide use in radio and radar equipment.

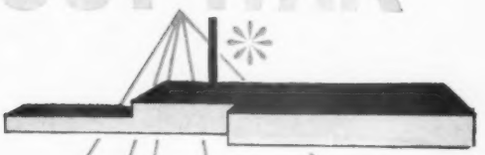


Sponge Rubber Products Co.

132 Housatonic Avenue

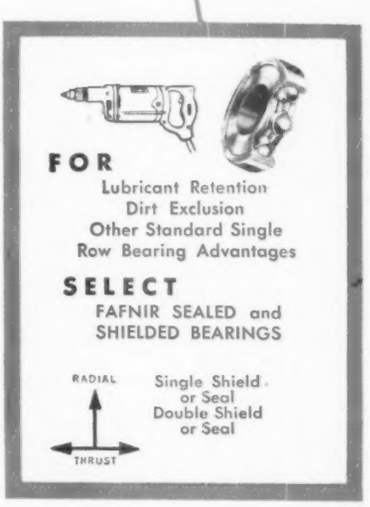
DERBY, CONN.

FOR A POST WAR WORLD OF USES













FOR ALL INDUSTRIES .. Yours in Particular

Is your product one of those already released for production? Or will it be released soon? In either case, Fafnir's production facilities will interest you as they assure a continuous and dependable supply of the ball bearings you need.

If you are planning to introduce a new product you will want to lick friction problems well in advance. Fafnir engineers can be of invaluable assistance while your proposed "new one" is still in the blueprint stage.

Every requirement of speed, load, thrust, compactness and long life has been met successfully with Fafnir Ball Bearings. Let Fafnir help you engineer friction *out* of every turning point. The Fafnir Bearing Company, New Britain, Connecticut.

ARMY E NAVY

FAFNIR

BALL BEARINGS

BUY MORE WAR BONDS AND STAMPS



PROTECTS

The tough, resilient, coiled rawhide faces of C/R Hammers and Mallets strike effective blows without battering or marring... protects finished surfaces, machines delicate insulation and parts. Speed die-setting, assembly, no fatiguing re-coil. Reduce breakage and spoilage. Sizes and weights for every need.

C/R Hammers have permanent malleable iron heads which take replaceable insert faces of mechanical rawhide.



F.O.B. filosofy of buying

ON THE editorial page of our August issue, an instance was cited where the manufacturer who developed some special new machinery for the armed forces in the natural expectation of getting the order to make this equipment, found out—too late—that the orders were placed elsewhere and had to be contented with a few subcontracts for minor components as his reward. The incident, a not uncommon problem in industrial procurement, war or no war, was reported as something that could and did happen, and that ought to be avoided. No inference was intended that this was typical of Army procurement policy. As a matter of fact, we are reminded by the Purchases Division of the Army Service Forces, it is precisely opposite to Army policy governing such situations, and we are glad to cite chapter and verse of PR 2, General Purchase Policies, applicable to this point:

224. *Contracts for newly developed articles.*—In placing contracts for new articles developed by a manufacturer for War Department use, the following principles will be observed:

(1) In general a substantial proportion of the initial orders for a new article should be placed with the manufacturer who developed it. Unless the chief of the technical service concerned deems it impracticable so to do, effort should be made to place enough of the volume with other qualified producers to develop at least one other experienced source; except in unusual cases this should be a going production order and not a limited quantity educational order.

(2) When the originating manufacturer demands a price for the item substantially higher than the price for which it can be secured elsewhere, or will require substantially more facilities or tools than some other producer in order to get into production, or is already heavily loaded with orders, and the article can readily be made by one or more other producers, the contracts for the article should be placed with such producers. In such cases the originating manufacturer should be fairly paid for his developmental work as such.

• •

PERSONAL liability of Purchasing Agents in connection with the actions of their employers is emphasized in a recent Federal suit against a West Coast film studio for violation of WPB regulations. Even though the individual charges were dismissed in this case, and a fine assessed against the corporation alone, the incident is a salutary warning to all purchasing men. The charge details that the company obtained a WPB permit to build a temporary sound stage costing $23,760 to make Army training and propaganda films, but actually went ahead and built a permanent stage at a cost exceeding the authorized allotment by some $33,000. Action was brought against the corporation and against four individuals as officers of the corporation, including the secretary-treasurer, a production manager, administrative assistant, and Purchasing Agent. A plea of *nolo contendere* was accepted by the Federal judge, and the fine assessed against the corporation alone. In spite of the happy ending, there's a moral in this case for the Purchasing Agent to be mighty sure of the personal responsibility he assumes whenever he pens his signature on a purchase order.

• •

IT MAY be a trend of the times that leads our contemporary, *Shipping Management,* to refer editorially to the "S-Room" in referring to shipping department practice. We hereby pledge not to follow that precedent in respect to purchasing.

• •

THE acceleration of technical progress in wartime is graphically illustrated by the Allis-Chalmers Manufacturing Company's report on engineering developments within that organization for 1943. This is just one company, but the record of significant improvements crams an 88-page book, classified under thirty-one principal headings, indexed by 140 products and processes affecting scores of industrial fields. And there's quite a lot of important information that can't be divulged until after the war, for reasons of national security. The user who continues to specify, and the purchasing man who continues to buy on the basis of past practice,

without keeping step with these tremendous advances that are going on in every industrial sector, are pretty sure to put their companies in the rear rank of the business procession.

• •

ADD one more exhibit to the evidence *re* women in purchasing work, which has been presented in this column for the past several months. Miss Naomi C. C. Allen, who has been employed for the past five years as a buyer at Camp Holabird, near Baltimore, has now been officially named Purchasing Agent of this gigantic warehouse of the Army Signal Corps. Miss Allen probably holds the world's record as a purchaser of fire fighting equipment, having bought more than a thousand fire trucks, crash trucks, and similar apparatus. But her experience has by no means been restricted to one narrowly specialized category. A review of the purchase orders she has issued shows items as small as fifteen cents at the one extreme, and as high as twenty million dollars on another order. She describes her job as "a woman's dream".

• •

THE KVP Philosopher (Kalamazoo Vegetable Parchment Company) in a recent issue recounts an experience of his early selling days, when he trembled fearsomely and had to summon up all his courage before venturing a call upon one Purchasing Agent in his territory who had the reputation of eating salesmen for breakfast or throwing them out by one ear. But he survived the interview and now, years later, offers this testimony:

> "We had not then learned that nine times out of ten, the tough guy' Purchasing Agent is basically a softie, putting on a show to cover up a naturally kind and even sentimental disposition. The mildest ball player will sometimes bait an umpire for the same reason. The tenth time, we might add, he has stomach ulcers, or has had burned toast for breakfast, or is afraid to show his ignorance of his job. . . . Although we have met hundreds of buyers since, we have never again feared to face one, no matter what his reputation for cussedness. And of all those we have met, only two of the entire number are, we are convinced, ornery just for the sake of being ornery. We doubt if salesmen can show a much better percentage.

RECONVERSION is under way. We found concrete evidence of this in a sign hanging in a Fifth Avenue shop window: "Now Open Under Old Management."



"Brrr . . . sometimes I wish these Armour discs wouldn't cut quite so cool!"

THE gentleman may be exaggerating . . . but honestly, you can't buy a cooler cutting abrasive tool than an Armour Fibre Combination Sanding Disc. They cut faster, with less heat . . . because the razor-sharp aluminum oxide is uniformly spaced and uniformly sized. This means maximum grinding performance from every square inch of the disc. And thanks to a *specially made* Armour glue, each abrasive particle is anchored to the backing for keeps!

The fibre combination sanding disc is only one of a complete line of Armour abrasives...a line which includes belts, cones, sheets, bands and other more specialized shapes. Whatever your abrasive problem, you'll discover there's an Armour product that will solve it efficiently and economically.

Armour Sandpaper Works

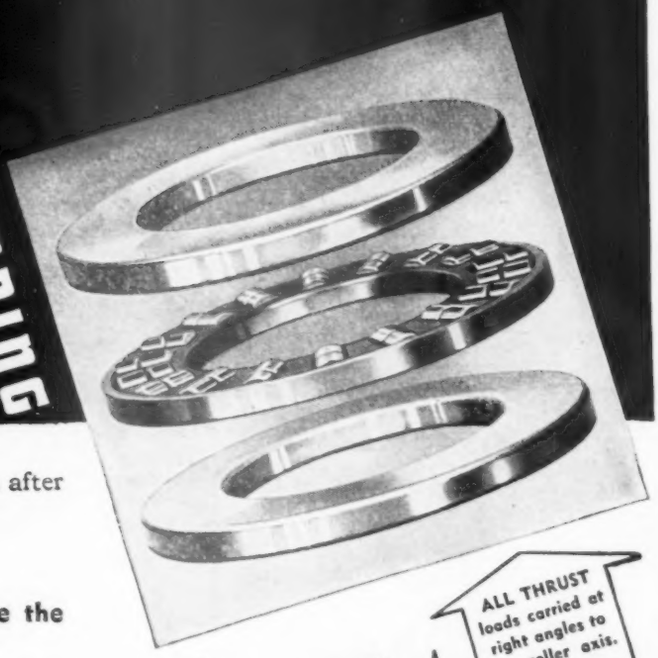
DIVISION OF ARMOUR AND COMPANY

1355 West 31st Street, Chicago 9, Illinois



More Bearing Performance at Lower Cost . . . with

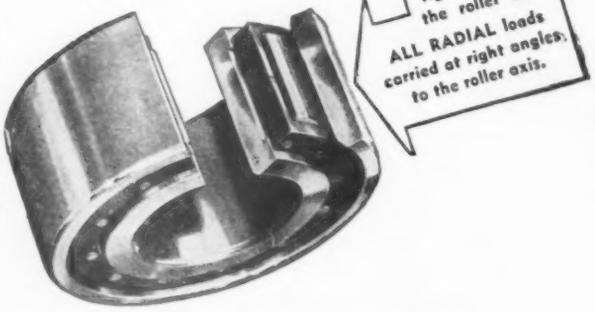
ROLLWAY
RIGHT-ANGLE LOADING



Of course, you'll have to sweat out extra production after the war in order to . . .

1. **Hold your competitive position**
2. **Break into new markets**
3. **Cash in on the flood of postwar orders before the peak demand dries up**

So, right now, make sure that the new designs on your drafting boards are developing around these high-performance, heavy-duty bearings. Bearings that insure longer life at higher speeds, and under heavier loads.





For longer bearing life, more efficient performance and more economical maintenance . . .

FOLLOW THIS BASIC BEARING PRINCIPLE

- All radial loads carried at right angles to the roller axis.
- All thrust loads carried at right angles to the roller axis.

RIGHT ANGLE LOADING IS THE REASON

One look at the diagram tells you why Rollway's right-angle loading insures more performance per unit of cost. There are no compound loads to muddy up the stress analysis or to aggravate wear and cause premature failure. Loads are resolved into their simplest components of *pure radial* and *pure thrust*. And each of these separate components is carried by a separate roller assembly AT RIGHT ANGLES TO THE ROLLER AXIS. That means oblique resultants and compound forces are out.

There's no squeezing action to force the rollers from between the races, hence less end-rub and less roller-end wear back. Each separate assembly safely carries heavier loads at higher speeds, or gives proportionately longer life at the same load and speed.

DON'T DELAY Send a sketch, drawing or detailed specification for free bearing analysis by Rollway engineers. The right type of bearing will make a vast difference in the ultimate performance and market for your product.

ROLLWAY BEARING COMPANY, INC., SYRACUSE, NEW YORK

BUILDING HEAVY-DUTY BEARINGS SINCE 1908 **BEARINGS**

SALES OFFICES: Philadelphia • Boston • Pittsburgh • Youngstown • Cleveland • Detroit • Chicago • St. Paul • Houston • Tulsa • Los Angeles



New Horizons *in* WELDING



A NEW 16MM. SOUND FILM

Here It Is! The Dramatic Story of Production Welding—Brought to You Via Motion Pictures

"New Horizons in Welding" is the first complete story of production welding ever to reach the screen . . . 30 fast-moving minutes of *sound* screen entertainment.

Here is the drama of the electric arc — the gleam that has grown from a glimmer — *grown 500 times in 10 years!* Here, too, is an education in the methods used to cut costs and speed production where welding has hit the peak of its development — in the fabrication of all-welded products.

An "Inside" Story — But Available to All

"New Horizons in Welding" is *really* an inside story . . . filmed in the plant of one of the world's largest *makers* as well as *users* of all-welded equipment. There you see the step-by-step procedure for welding on a mass production basis. *Every step,* from the birth of a project in the blueprint department to the host of labor-saving devices which speed it to completion — you'll see them all in "New Horizons in Welding."

P&H offers this absorbing, educational feature *without cost* to all interested groups — manufacturers, industrial schools, shipyards, government agencies, etc. Inquiries should be addressed to: Harnischfeger Corporation, Welding Division, 4577 West National Avenue, Milwaukee 14, Wisconsin.

P&H

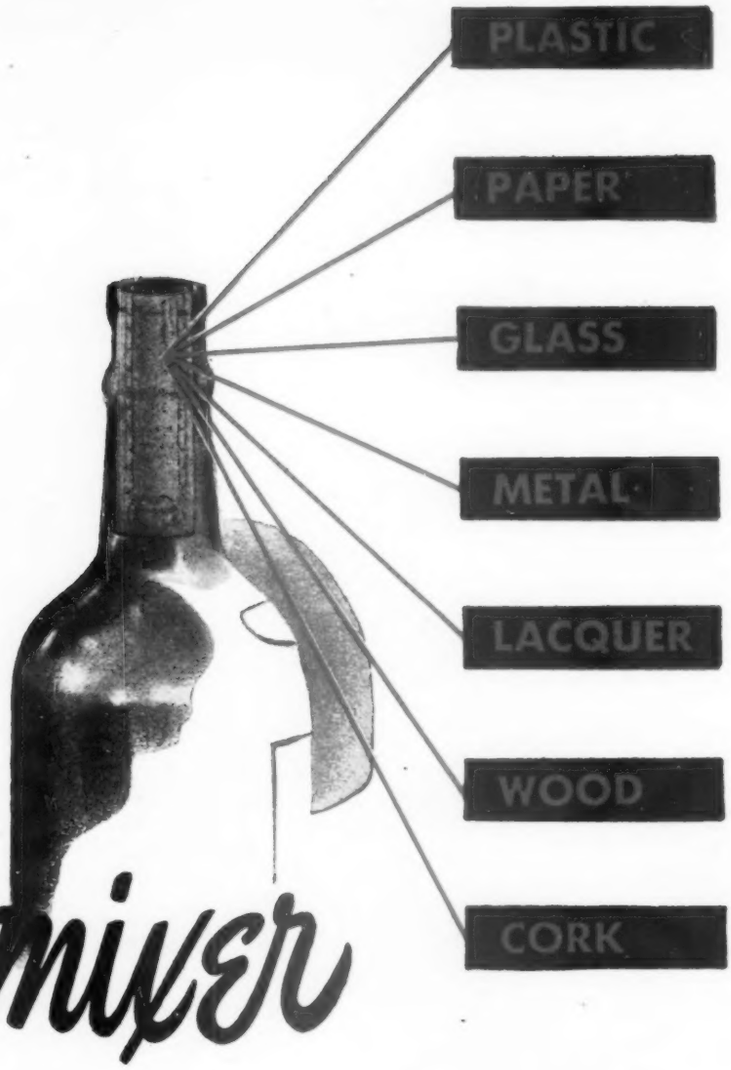
Overhead Cranes • Electric Hoists
Excavators • Welding Positioners
Arc Welders • Welding Electrodes

HARNISCHFEGER CORPORATION

WELDING ELECTRODES - MOTORS - HOISTS P&H ELECTRIC CRANES - ARC WELDERS - EXCAVATORS

Canadian Distribution: The Canadian Fairbanks-Morse Company, Ltd.

When an adhesive must be *a good mixer*



Rely on National's application research for an adhesive to give you a positive bond on a wide variety of surfaces.

Take any combination of surfaces – plastic, paper, lacquer, metal, cork, or what have you. Vary them with each lot of bottles being stamped. Vary the bottle shape, glass, condition. Then adhere a revenue stamp to all with a *single* waterproof adhesive . . . a very versatile adhesive . . . a good mixer!

National's strip-stamp adhesive does just such a difficult surface variety job. Yet it's only *one* of National's large family of resin adhesives. *Another* is providing water-resistant label protection to pyramiding supplies on the Western Front. *Still others* are bonding everything from lampshades to luggage and bomb rings to bandage boxes. *All* are performing difficult jobs – successfully.

Whatever your specific combination of conditions may be – the surfaces, application methods, field considerations – National as a pioneer in industrial as well as laboratory research, can simplify and speed-up your regular run of work and meet new problems as they arise. Your inquiry is invited – NOW!

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PURCHASING PREVIEWS

From the Washington office of

PURCHASING

National Press Building

Washington, D. C.

October 1, 1944

For Purchasing Executives:

CURRENT EMPHASIS ON POST-WAR PLANNING comes about six months too late for the operation of any comprehensive reconversion plan. From this point on, planning is largely improvisation, rather than "according to blueprint."

A major consideration in the delay of early planning was the opposition of the military to any diversion of manpower and materials from war production. In the current months, however, the considerations are largely political. The plans are based on the short range of the month directly ahead--and the need for preventing any unemployment in the immediate present.

Every effort is directed toward minimizng the conditions which are an inevitable prospect. Some of these conditions are:

1. Considerable "reconversion unemployment", during the period when plants reshuffle their production schedules.

2. A disruption in the lines of supply for both military and civilian production as plants place orders for components. Obviously, a major consideration in such placement will be speed of delivery. The military delivery and so-called essential civilian orders will be given an over-riding priority.

3. A sharp drop in the take-home wage of industrial labor, as manufacturers seek, of necessity, to cut the labor costs by adhering to a straight time wage scale.

4. A sharp bulge in production costs, as manufacturers are faced with higher initial costs during the reconversion period. Higher cost factors include change in production mix, uneconomic production and difficulties in obtaining deliveries. Reorganization of distributive and sales channels.

By throwing off all controls on materials (except a simplified version of the priority system) and by reducing the controls over labor and components, it is expected that reconversion will get quickly under way. It will be up to buyers to find sources of supply which can insure quickest delivery. The initial period will be one of uncertainty for some manufacturers as to what portion of their facilities will be clear for civilian output.

The whole picture is one which throws the brunt of planning on the individual company, and one of the heaviest responsibilities will be placed on the Purchasng Agent, who will face the same type of indecisive market which existed in the early priorities era.

* * *

PROCEDURES WHICH HAVE BEEN DEVELOPED TO EXPEDITE PROMPT CLEARANCE of plant facilities no longer required in war production have been announced by the Director of War Mobilization. These procedures set up a time-table, and manufacturers can require that the Government procurement agencies meet this time-table.

These procedures follow:

1. Whenever a war contractor is of the opinion that he no longer requires for the performance of any war contract, Government-owned facilities covered by purchase or lease option, he will promptly notify the owning procurement agency of his desire to exercise or waive the option. If he desires to exercise the option, the facilities will be disposed of accordingly. The procurement agencies are prepared to waive or release, under terms and conditions deemed appropriate, any existing obligations of war contractors under facilities contracts.

2. The war contractor will submit an inventory list of items which become excess with the curtailment of his contract and which are not

under option classified for retention or for removal. He will indicate the space which he has available for storage under appropriate rental. Unsatisfactory inventory lists will be returned by the procurement agencies within 10 days. Within 20 days, the procurement agencies will notify the war contractor of those items in his inventory which are

a. Necessary for war production;
b. May be retained by the contractor;
c. May be stored by the contractor; and
d. Should be prepared for shipment to a designated place.

Within 60 days after receipt of a satisfactory inventory list, the procurement agencies

a. Must dispose of any or all of the facilities to the war contractor which the Government is willing to release;
b. Complete arrangements with the war contractor for the storage of those inventory items which he is prepared to store; and
c. Remove the balance.

At any time in this period the war contractor may remove and store at his own expense and risk any materials or equipment no longer required for war production. After the elapse of 60 days from date of receipt of inventory, the contractor may remove and store such materials at the risk and expense of the Government.

In order to facilitate the removal of equipment and material, the procurement agencies are developing storage space requirements and reporting these requirements to the Space Control Committee of the Surplus War Property Administration.

This Space Control Committee has regional subcommittees located throughout the United States which maintain listings of all suitable storage space and allocate space to the procurement agencies to meet their requirements.

In addition large centrally located storage centers are being developed where prefabricated temporary store shelters can be erected quickly to protect stored equipment. These storage areas will be located in industrial centers and will be operated under government contracts by commercial warehousemen.

All procurement agencies will be required to establish a reporting procedure which will show the progress being made in clearing plants.

* * *

BRIG. GEN. ALBERT J. BROWNING, Director of Purchases, Army Service Forces, takes an optimistic view of reconversion. Speaking before a session of the American Retail Federation, General Browning made the following observations:

The problems of reconversion have been greatly exaggerated, since less than 20% of industry, in terms of employment, ever converted their plants.

There is no reconversion problem facing the textile industry. They did not tear out their machines and put in machines to produce airplane parts. They have continued to make textiles, both for civilian and military use,and all they need to do is in some cases change the type of materials and go right on producing for civilian markets. Further, a plan is being worked out with the textile plants so that they can take over all of the materials in process and convert these to civilian textiles.

The locomotive and farm equipment companies have been largely converted back to their peacetime operations already.

The garment industry has no reconversion problem; the paper industry, the furniture industry, with few exceptions; the spark plug manufacturer, the tremendous food industry, the glass manufacturer, the leather producers, the steel producer, the copper producers, the miners, the petroleum industry, the tire manufacturers and so on through a long, long list of industries can change to civilian type products immediately.

Some factories definitely will have a reconversion problem. In the automobile industry, part of the factories are still making trucks. The passenger car end of the business has been completely converted, and will have to be reconverted, and that is no simple problem.

The man who has a reconversion problem has a serious one, he concluded, but by and large, American industry can start production of civilian goods almost immediately after termination of contracts.

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WHAT YOU SHOULD KNOW ABOUT THE TIMKEN BEARING

MATERIAL

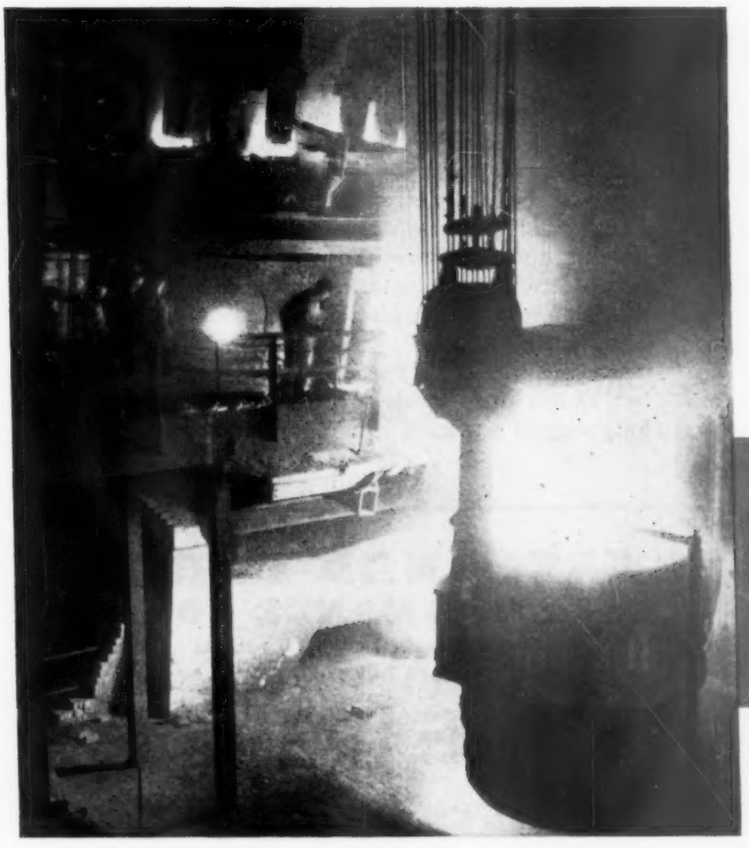
Measure of Endurance

Design is of primary importance in the outstanding performance of the Timken Tapered Roller Bearing. However, the load capacity, endurance and life of the bearing depend very largely upon the material of which it is made.

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Timken Alloy Steel itself has achieved an international reputation for quality and now is used for many purposes other than bearings. It has played a leading role in America's war effort. The Timken Roller Bearing Company, Canton 6, Ohio.



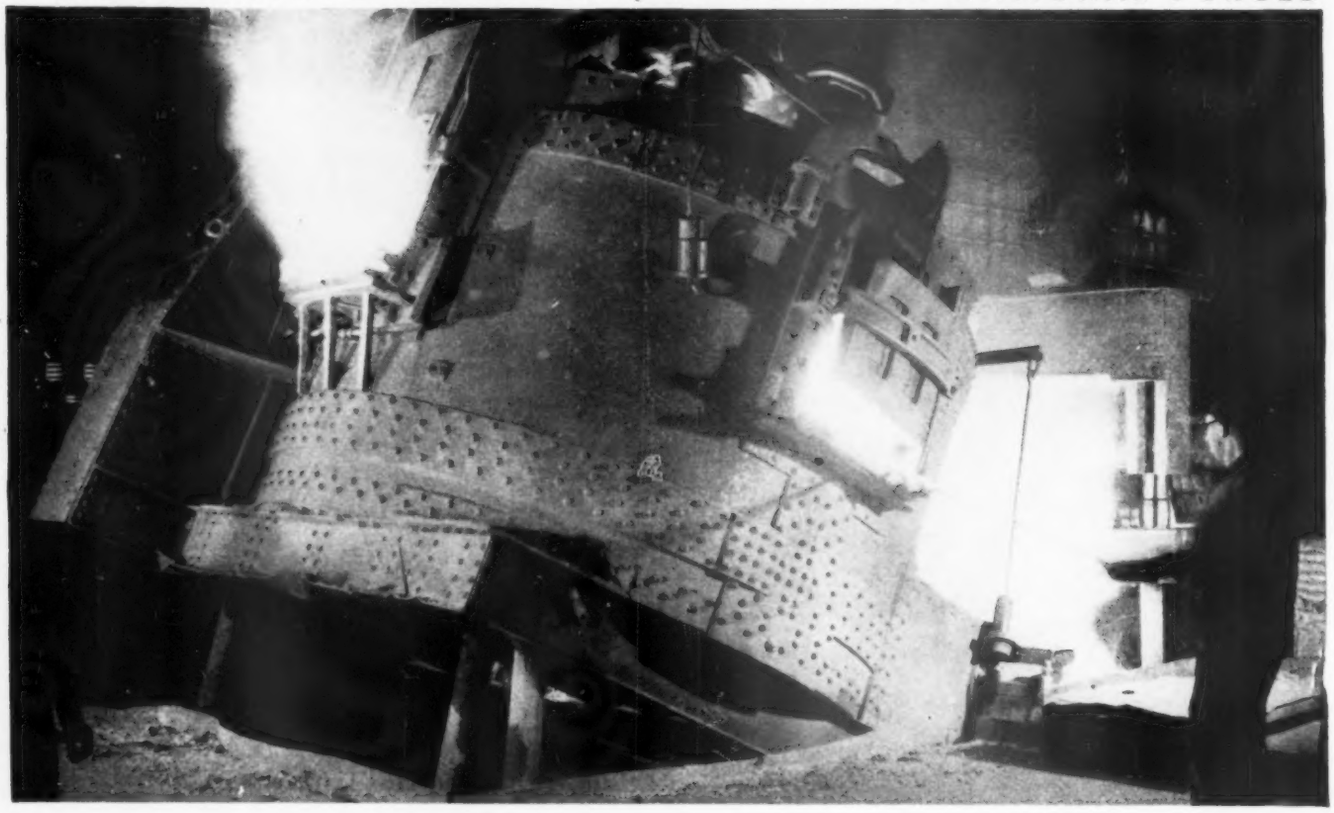
Pouring a heat of Timken Electric Furnace Alloy Steel at the Timken steel plant.

TIMKEN

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TAPERED ROLLER BEARINGS

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BY PRODUCING FOR WAR

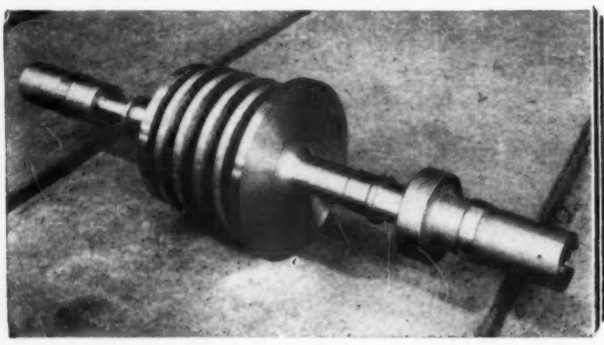
WHEREVER steel products are at war, none are more essential than the heavy duty steel forgings made for the Army and Navy by National Forge. The war effort here pre-dated Pearl Harbor by many months and brought the first "E" award to National Forge workers on October 24, 1941.

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This steam turbine rotor is typical of the intricate special forgings produced at National Forge.



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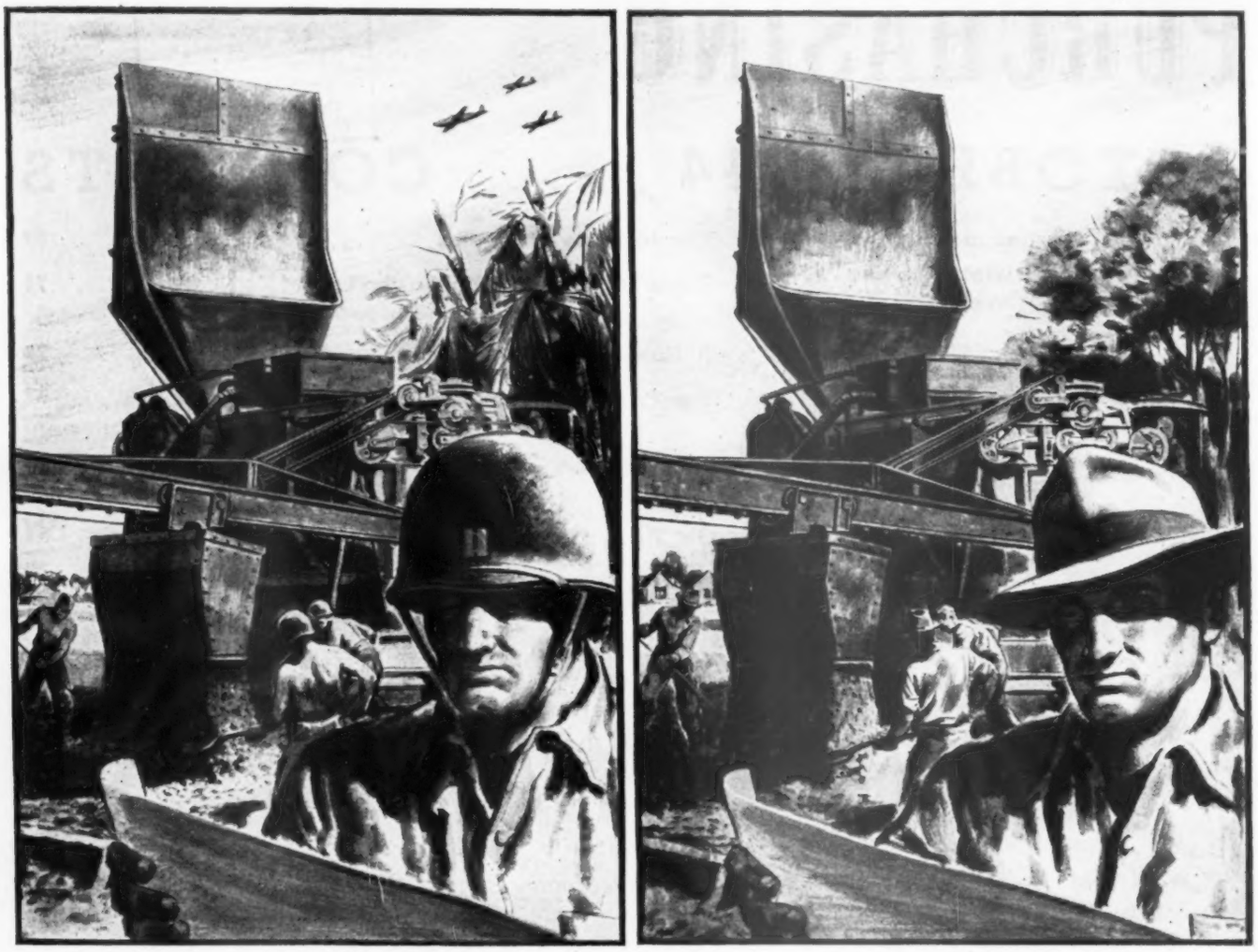
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Front cover photo by Brown Bros., New York

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BRIDGING THE GAP to Peacetime Jobs... American Road Builders' Plan points way

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The American Road Builders' Association has submitted a comprehensive plan for post-war roads and jobs. It calls for construction of needed new highways and improvement of the present United States highway system, including bridges and grade crossings. It would create jobs for millions of men.

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There's an inspiring 64-page booklet, "A SOUND PLAN FOR POST-WAR ROADS AND JOBS," prepared by the Association. Get a copy today. Write for it to The American Road Builders' Association, 1319 F St. N.W., Washington 4, D. C.

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The Measure of Surplus

LARGELY as a matter of convenience, rather than of logic or strict accounting, the accepted measure of the Federal surplus stockpile, present and future, has been in terms of dollar value, figured at cost. Up to the present time, this has probably been as good a yardstick as any for the purposes at hand, although it isn't a measure that would be accepted in industry, which has to be realistic and accurate in balancing its assets.

In dealing with land, facilities, products, and materials that have been declared surplus, the usual alternatives of market or replacement cost do not apply. Replacement is not contemplated, and the market for surplus is an exceedingly questionable figure. It is, in fact, one of the very big and very interesting question marks in the whole post-war situation. Industry is deeply concerned with surplus valuations.

An industrial operation would carry declared surplus on the basis of what can be realized from its liquidation, which might vary all the way from scrap value to a profit, and might bear very little actual relation to original cost.

Now that surplus disposal is getting under way, we have an opportunity to judge accuracy of the figures on surplus value. The Reconstruction Finance Corporation recently announced sales amounting to some fifty-six million dollars at 12.8% below listed values. Defense Plant Corporation complains that bids for surplus chemicals are "inequitably low" and is revising its whole program, already delayed. Surplus aircraft is bringing approximately 60% of cost. Defense Supplies Corporation is selling foreign wool at $1 per pound, cleaned and including duty, and with a refund of 99% of export duty, at the same time that it is buying domestic wool of the same grade at $1.20. Tentative "auctions" of surplus property are hedged with ceilings and upset prices.

It should be remembered that all this is happening at the outset of the disposal program, before the bulk of large accumulations, as yet undeclared, have made their impact upon the market. Under these circumstances, the cost valuation of surplus is rapidly losing its meaning. Markets are made when buyers and sellers get together.

Stuart F. Heinritz



When Timing is of the Essence

Soon the great bombers will take off on another history-making raid. The briefing session has charted the mission in minute detail—each crew knows its exact task. Eyes on watch, an officer calls out, "In 15 seconds it will be 4:08 . . . 10 seconds . . . 5, 4, 3, 2, 1, check—4:08."

The success of a large-scale aerial attack depends on a multiplicity of supporting factors, including supplies, data on the target area, weather, flight courses, altitude and approach of the bombing run. And timing.

Similarly, the timing of production schedules is all-important in successful manufacturing operations. When raw materials meet specifications one source of costly delays is avoided. Columbia's reliability in this respect helps maintain production . . . an important reason why Columbia is the preferred supplier for so many manufacturers.

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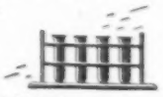
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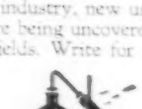
HEXACHLORETHANE is one of the smoke-producing chemicals which our Chemical Warfare Service has used to such great advantage on every front. Screening our operations from observation has reduced enemy effectiveness and kept down our casualties. As indicated by the name, chlorine is one of the ingredients of hexachlorethane, and Columbia is one of the principal producers of chlorine required for this purpose.



ALLYMER—Columbia's recently announced thermosetting plastic—is truly a "contact-pressure" resin. In making laminated products, only enough pressure is used to keep plies in contact with the mold. The relative simplicity of the tooling necessary when Allymer is used and the large complicated sections which can be made greatly extend the application possibilities for laminated parts. Research reports and other data are available on request.



HOMEMAKERS, who have despaired of the ugly black marks left on floors by rubber-shod members of their families, can now eliminate this nuisance by insisting that "no-mark" soles and heels be obtained. Those two remarkable Columbia pigments, Calcene T and Silene EF, are being used with GR-S to make a highly satisfactory no-mark sole and heel stock. Primarily developed for the rubber industry, new uses for these pigments are being uncovered in numerous other fields. Write for information.



THOUGH THOUSANDS think of "bicarb" only for the relief it brings to certain stomach maladies, Sodium Bicarbonate serves in scores of other important uses in a variety of industries. To name but a few—in the baking and milling field, particularly as an ingredient of baking powders and self-rising flours . . . in the leather industry, as a neutralizer in tanning operations . . . in textile manufacturing, for the prevention of timber mold. Columbia manufactures three grades of Sodium Bicarbonate in various granulations to meet the specific needs of customers in every field.



COLUMBIA CHEMICALS include Soda Ash, Caustic Soda, Sodium Bicarbonate, Liquid Chlorine, Silene EF (Hydrated Calcium Silicate) Calcium Chloride, Soda Briquettes, Modified Sodas, Caustic Ash, Phoslake, Calcene T (Precipitated Calcium Carbonate) and Calcium Hypochlorite.

HIGHLIGHTS

A brief summary of outstanding features of timely interest and importance in this issue, to conserve the time of busy readers



Production is only the first step in supplying our forces overseas. Packaging and **Handling the Materials of War** for delivery to distant fronts has been a major problem for Navy specialists, and the remarkable results that have been achieved embody some highly pertinent suggestions that industry may profitably follow. Turn to page 86, where the Officer in Charge describes how the Navy organized for the job and the methods that have been developed.

Going to use **Plastics** in your post-war product? Then you are facing the job of selecting the one most suitable material out of a dozen different types and hundreds of special formulations, each with distinctive properties that may or may not fit the case. The second article in an important series on this subject, appearing on page 82, tells how to go about this selection intelligently.

How much does management know about what goes on in the purchasing department? And how can purchasing men present their story most effectively to make management aware of purchasing's contribution to overall efficiency and profits? In this month's guest editorial, on page 71, Julian Davies, N.A.P.A. Vice President and Chairman of the Committee on **Public Relations for Purchasing,** outlines a program designed to answer these questions.



There's a story of vital importance to both **Sales and Purchasing** on page 99. The relationship has lost much of its meaning under wartime regulations, but the closest and most constructive sort of cooperation will be needed during the period of reconversion and in the post-war markets. Here is an analysis and forecast of sales and purchasing problems during the critical days ahead, and how they can be worked out together.

While **Patent Laws** protect the rights of one manufacturer, they define a serious responsibility for every purchaser of the patented product. Leo T. Parker's article on page 108, based on recent court decisions involving patent law, will help you to avoid the entanglements and penalties incurred through patent infringement.

If identical information has to be entered on two or three different forms, there's something wrong with the system. A progressive New England company has conceived the entire procurement process applied to one lot of material, from requisition to issue, as a single broad transaction, and has developed a complete order and control procedure based on **One Original Form and Entry.** There's a lot of food for thought in the description of that system, on page 72.



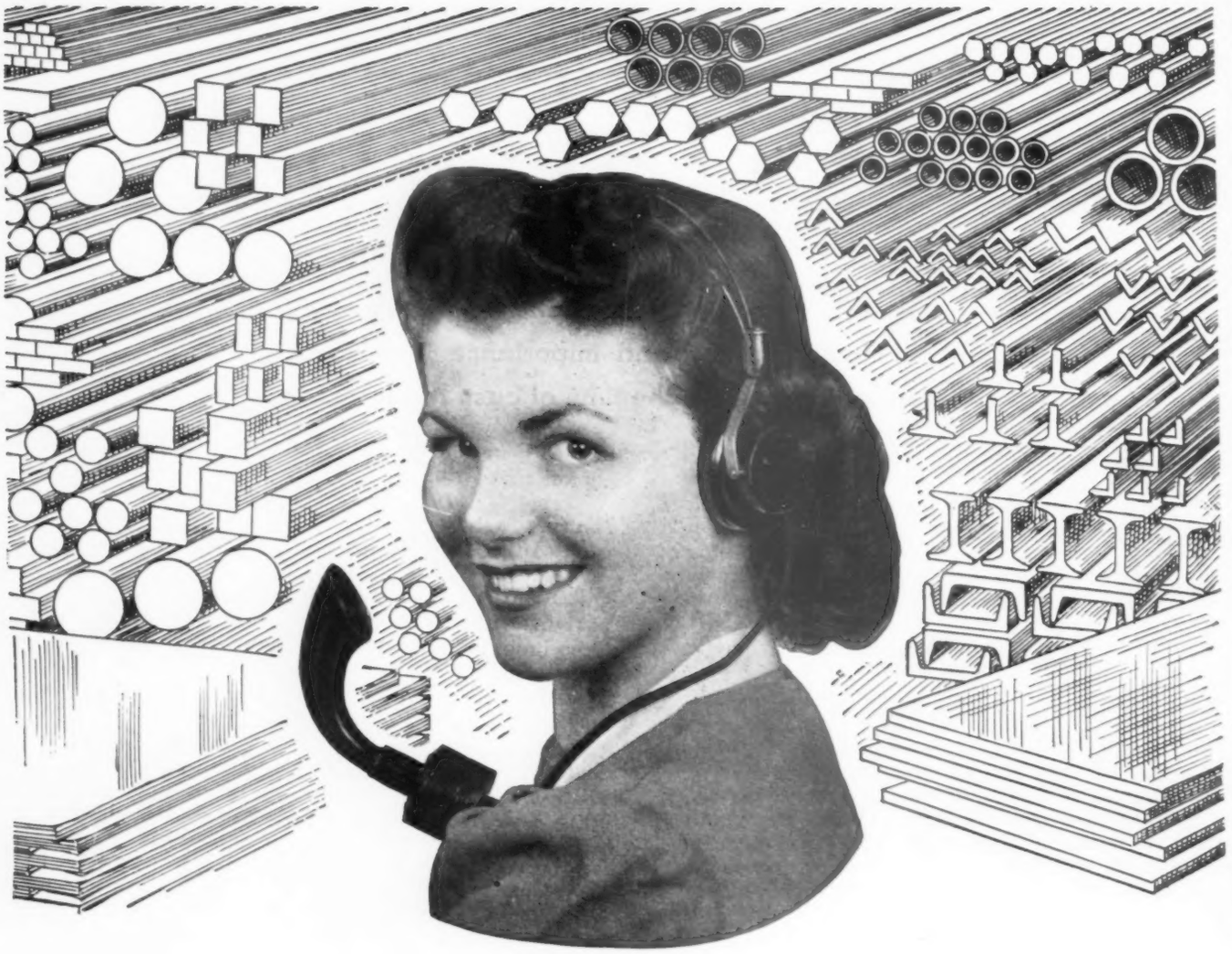
All along our **Pacific Coast,** a vigorous and diversified industrial development has been brought to new national significance with the addition of war facilities. A continent's width removed from traditional manufacturing centers, with unique transportation problems and relations to supply and market areas, purchasing west of the Rockies is a challenge to resourcefulness. In a timely story on page 91, a purchasing man of wide experience in the East and West analyzes the problems and prospects of the West Coast buyer.

Will **Price Control** have outlived its usefulness with the end of hostilities? On page 77, the Washington Editor reporting current thought in the Capital, explains the role that OPA is expected to play during the reconversion period in order to help make a smooth transition to peace-time manufacturing, when a new balance will be achieved.

There's no enterprise in which **Inventory Control** is more essential to efficient operation than a busy air line. Here is a simple control system that starts with the purchase record card, a formula, and four colored tabs. It works, and it practically runs itself once the basic calculations have been made. See the article by W. G. Loftus on page 101.

Purchasing and Politics may seem to have little in common, but Charles Ford, the philosopher of purchasing, opines that somebody has to make the profits to pay the taxes, and business needs good purchasing to do the job. Turn to page 97, and read "Ol' Man River".

Don't overlook those monthly departmental features compiled especially for purchasing men—the **Washington Letter** on page 55, with its timely and authoritative preview of official trends on matters affecting industry, as gathered by our Washington office; the listing of **Know-How Information,** that is yours for the asking, appearing on page 10; and the illustrated summary of **New Products and Ideas** that are now available for the industrial buyer (page 116), providing a quick and convenient means of keeping up to date on recent developments in industrial products.



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QUICK, DEPENDABLE SHIPMENT

Public Relations for Purchasing

We buyers have a vital story for industry and management. Let's put it across aggressively and effectively by marshalling the facts about our function

By JULIAN G. DAVIES

Purchasing Agent
N. Slater Company, Limited
Hamilton, Canada



Mr. Davies is a Vice President of the National Association of Purchasing Agents, representing District No. 5. He is Chairman of the newly organized N.A.P.A. Committee on Public Relations.

THE gyrations of the wheel of fortune as they affect our activities, frequently cause us to wonder if there really is "a divinity which shapes our ends, rough-hew them how we will."

Some fifteen years ago I conceived what, to me, appeared the bright idea of helping to direct the business spotlight on the importance of Purchasing and the Purchasing Agent. I did considerable talking and writing on the subject at that time, my remarks being directed to the members of the three Canadian Associations of Purchasing Agents which were then in existence. After ranting on the subject for some time, even I could see that I was getting nowhere fast, and the subject died of inanition.

Now, after these many years, the topic suddenly springs to life. It doesn't break out in one spot only, but seems to have erupted almost simultaneously in widespread sections of the continent. Even more astonishing, I find myself, in this year of our Lord, a Vice-President of the National Association of Purchasing Agents, and as such, am asked to become chairman of the newly-formed National Committee on Public Relations.

At our N. A. P. A. Convention in New York in May last, this subject was thoroughly discussed by the Executive Committee. Bob Swanton, our new President, and Paul Burroughs, President of the Rochester Association, read papers on it; our National Bulletin of June 14th last, and purchasing magazines before that, made references, some briefly, others quite extensively, to it. Our first Public Relations re-

(*Continued on page 324*)

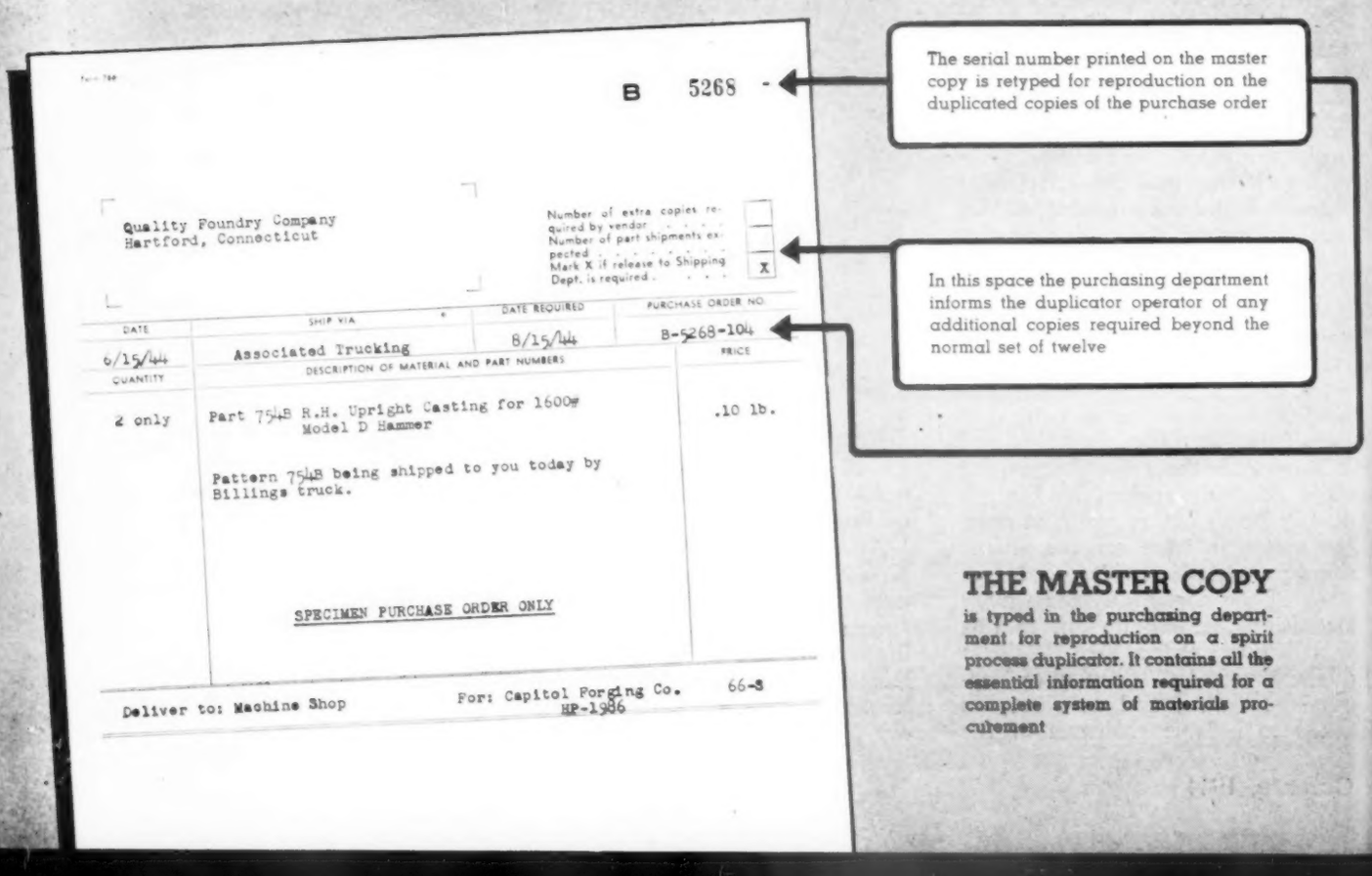
COMPLETE ORDER SYSTEM from ONE MASTER COPY

By consolidating all pertinent information regarding purchased materials on a single master sheet for duplication on a variety of special-purpose forms, the procurement process is organized simply and completely

THE purchase order system at The Billings and Spencer Company, Hartford, Conn. combines simplicity with exceptional completeness. Some Purchasing Agents may raise a questioning eyebrow at the "simplicity" of a system that starts with a minimum of twelve order copies, and one of whose important advantages is cited as the ease with which additional copies can be prepared. But when it is realized that this one form carries the transaction through the complete procedure of ordering, acknowledgment, follow-up, receiving, accounting, priorities, charge-out and control of materials and equipment furnished for outside operations, and that this is accomplished with a single typing, the word takes on a practical meaning.

This system, which was developed by W. H. Blackburn, Purchasing Agent, and S. H. Kimmens, Controller, has been carefully integrated with the overall record and control requirements of the organization in its internal procedures, as well as the standard requirements of vendors. It makes use of the spirit process of duplication, on forms so designed that with a little simple blocking out on some of the copies, the basic information regarding purchased materials is adapted to all phases of the transaction.

Purchase requests, or requisitions, come to the purchasing department in the usual way, with the proper approvals and accounting code. The purchasing department, after making the necessary decisions or negotiations as to vendor, etc., types the master copy of the order for duplication. The master copy blanks are serially numbered in type, so that a continuous sequence of order numbers is maintained, but this number is retyped on the form so as to reproduce on all copies that are run from the master. The purchasing department also indicates, in pencil, whether the particular



B 5268

Quality Foundry Company
Hartford, Connecticut

Number of extra copies required by vendor
Number of part shipments expected
Mark X if release to Shipping Dept. is required X

DATE	SHIP VIA	DATE REQUIRED	PURCHASE ORDER NO.
6/15/44	Associated Trucking	8/15/44	B-5268-104

QUANTITY	DESCRIPTION OF MATERIAL AND PART NUMBERS	PRICE
2 only	Part 754B R.H. Upright Casting for 1600# Model D Hammer	.10 lb.
	Pattern 754B being shipped to you today by Billings truck.	
	SPECIMEN PURCHASE ORDER ONLY	

Deliver to: Machine Shop For: Capitol Forging Co. 66-3
HP-1986

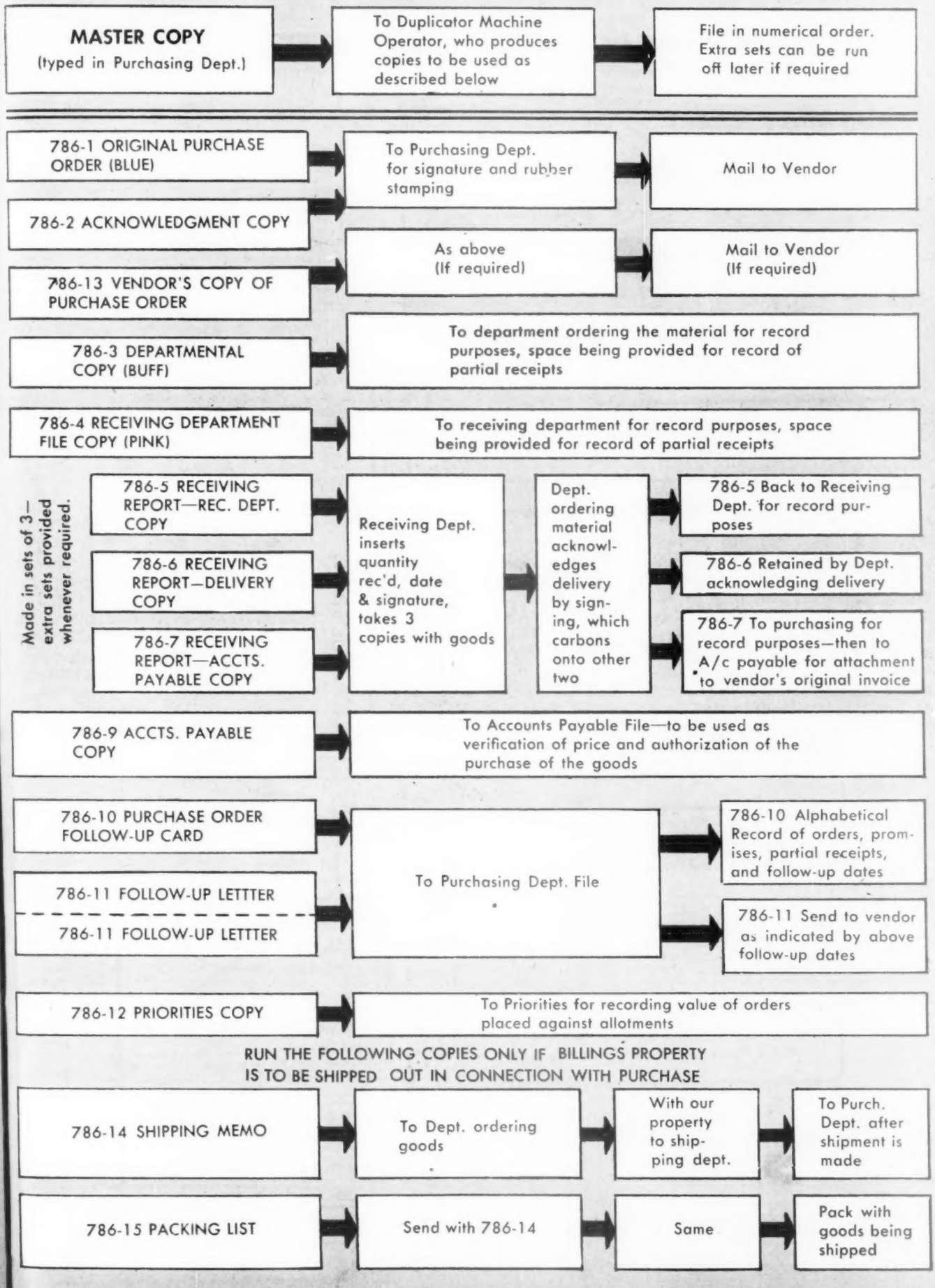
The serial number printed on the master copy is retyped for reproduction on the duplicated copies of the purchase order

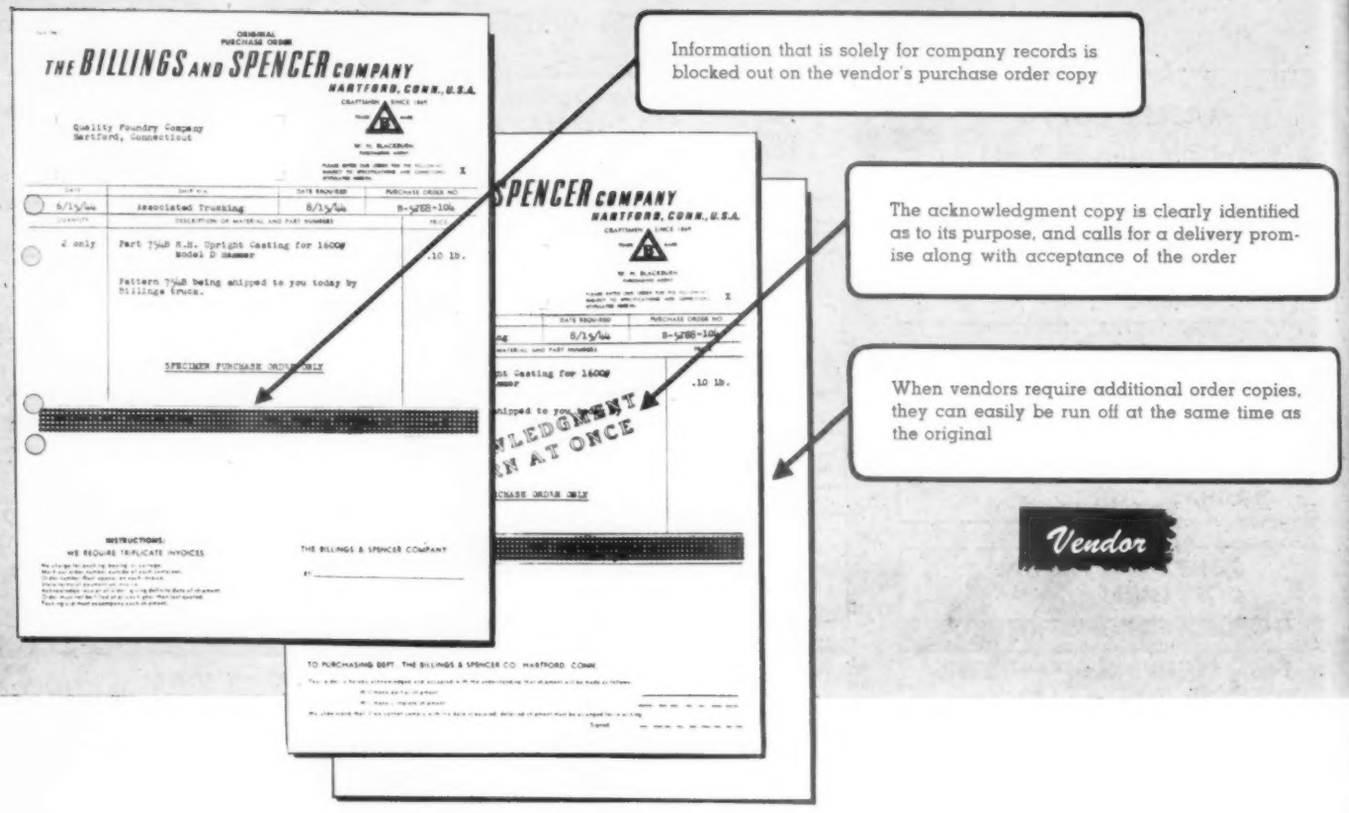
In this space the purchasing department informs the duplicator operator of any additional copies required beyond the normal set of twelve

THE MASTER COPY

is typed in the purchasing department for reproduction on a spirit process duplicator. It contains all the essential information required for a complete system of materials procurement

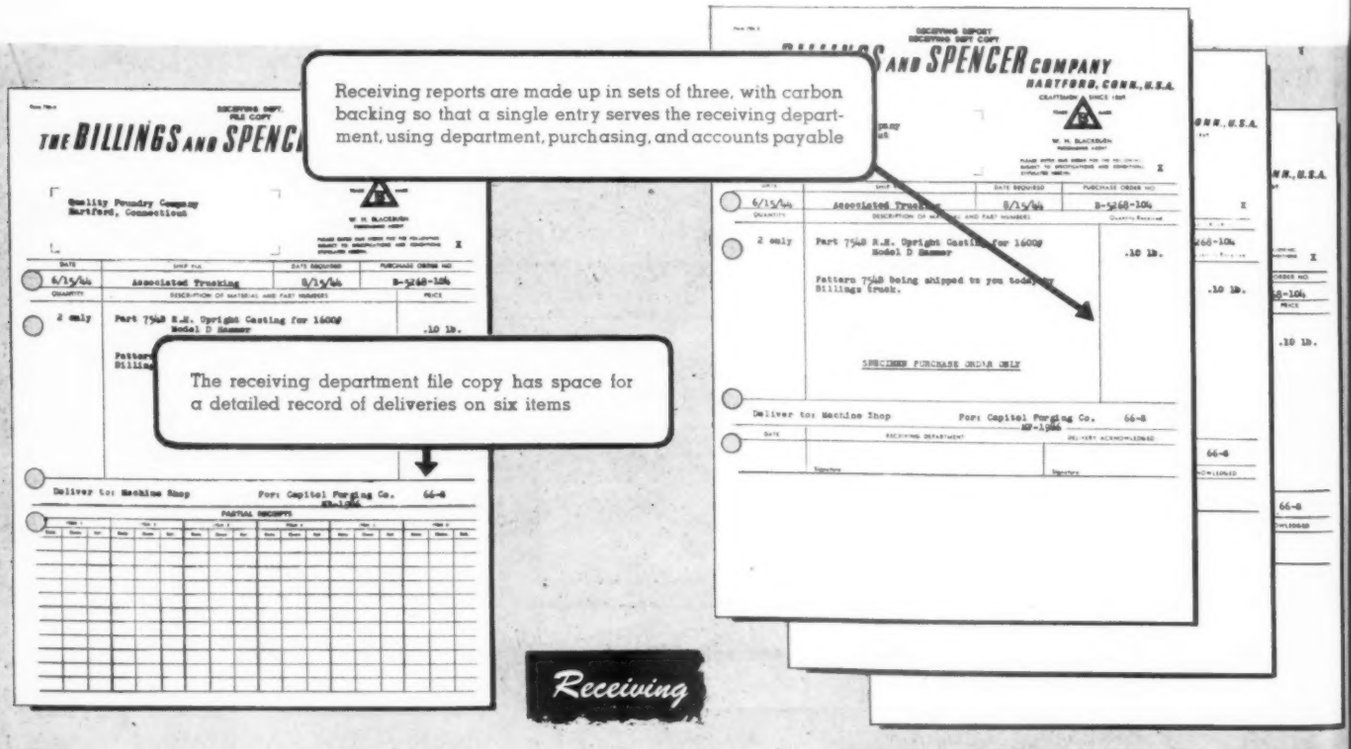
FLOW CHART—PURCHASE ORDER SYSTEM

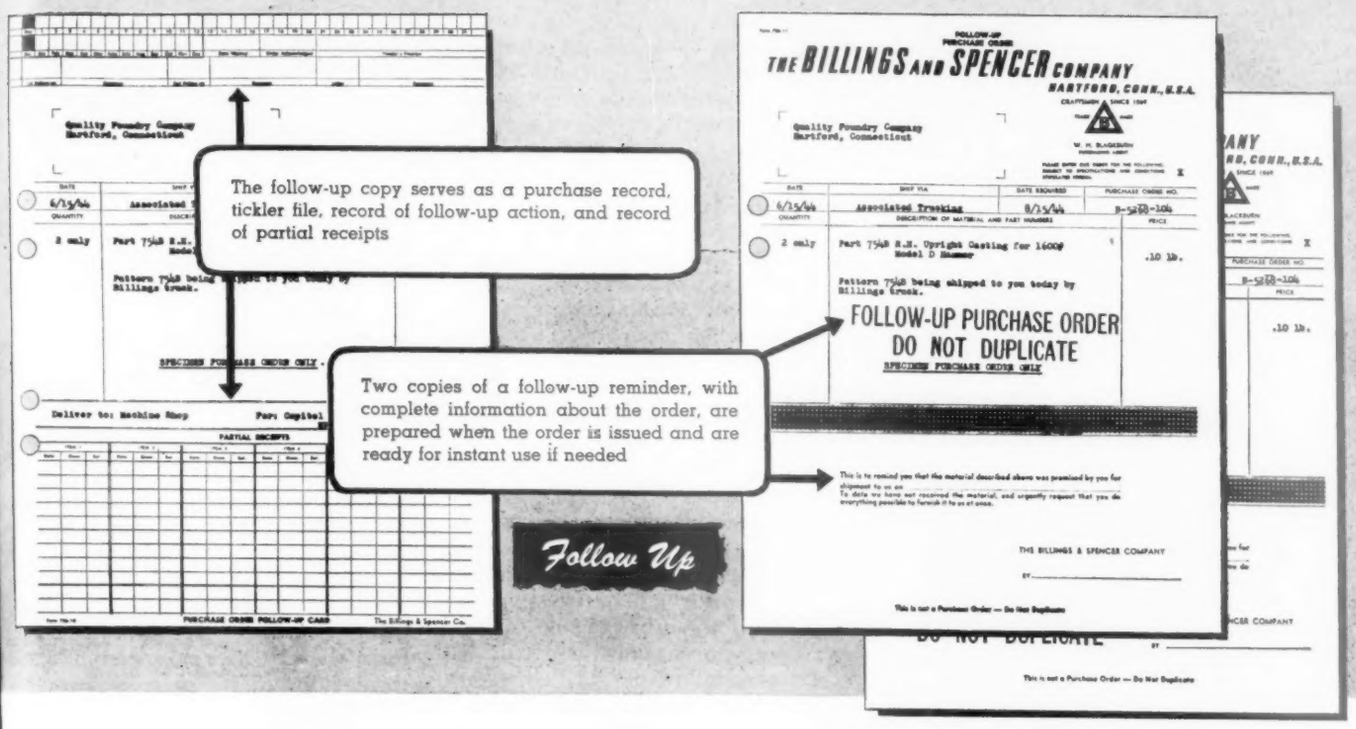




vendor requires extra copies of the order, and estimates the number of partial shipments that may be expected so that provision may be made for a sufficient number of receiving reports. If the order involves sending out any company-owned equipment such as patterns or dies, this fact is also noted by a check mark on the master copy, so that a shipping memorandum and packing slip will be prepared at the same time. Formerly a special "Recharge—No Charge Memo" form was required for this purpose.

When this information has been completed, the master copy is turned over to the duplicator machine operator, who knows from this form exactly how many copies will be required, and prepares a complete set of forms—the standard copies, plus any additional ones as indicated. The forms are then distributed, as shown by the flow chart accompanying this article, and the master copy is filed numerically so that additional copies can be run off at any future time as needed, as in the case of more partial shipments, etc. Pre-





pared from a single typing, properly checked in the purchasing department when the order is issued, there is no possibility of clerical error or confusion of numbers, no matter how many copies are required, or at what future time.

The standard set of order forms consists of twelve copies, identified by form number and clearly marked as to their purpose, and some further identified by a color code. These forms are as follows:

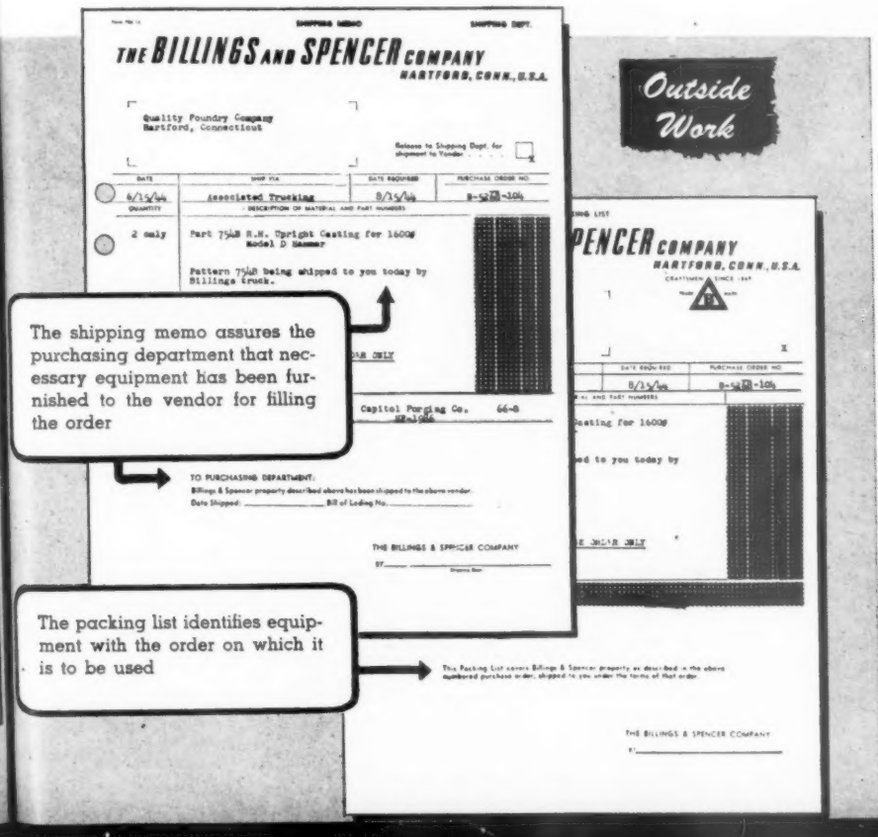
1. One "original" purchase order (blue), which is returned to the purchasing department for signature and for rubber stamping, then sent to the vendor.

2. One acknowledgment copy (white), sent to the vendor with the purchase order. This is overprinted "Acknowledgment — Return at Once," and in the lower portion which contains the signature and instructions or terms on the original order, it contains an acknowledgment form and delivery promise to be filled in by the vendor and returned to the purchasing department.

If the vendor's system calls for additional copies of the purchase order, a condition which is known to the purchasing department from previous transactions, these are prepared at the same time and are sent along with the original and acknowledgment form and delivery information such as shop order number, customer, and accounting code, are blocked out on all copies going to the vendor.

3. One departmental copy (buff), which goes to the department in which the requisition originated, as a record that the material has been ordered. This copy provides a space in which the receipt of the various items may be recorded for the convenience and information of the department.

4. One receiving department file and record copy (pink), sent to the receiving department as notice that shipment is expected, and to identify deliveries as received. The lower portion of this copy is ruled for recording receipts and partial receipts, by date, quantity, and balance due on order. Six columns are provided for this purpose, which explains the departmental ruling that no purchase order shall call for more than six separate items, a practice that em-



ply covers the great majority of purchase orders placed.

5, 6, and 7. A set of three receiving reports, which are used to record and report each delivery, whether complete or partial. The first two of these have blocks of one-time carbon backing, so that a single entry in the receiving department provides complete and identical vouchering for deliveries. The quantity received is recorded in the column reserved for "price" on the original order. Below is a space for the date and receiving department signature. All of this is carboned onto the other two copies. The three copies are delivered with the goods to the department for which they were ordered, and delivery is there acknowledged by signature, also carboned on all copies. The first copy is retained by the receiving department for record purposes, and the second copy is retained by the department having the goods. The third copy goes to the purchasing department, where the delivery is recorded, and then passed along to the accounts payable department, where it is attached to the vendor's original invoice for payment.

These three forms are always prepared in the complete set of three, and extra sets are provided as required, either from the original estimate of several partial shipments to be received, or run off from the master copy in the files if additional sets are needed.

8. One accounts payable pending copy (yellow) which is identical with the original order copy. This is sent to the accounts payable department when the order is issued, showing authorization for the purchase, and also used for verification of price and terms when the vendor's invoice is received. This is correlated with the accounts payable copy of the receiving report when the delivery is made and invoice received for payment. It has eliminated the previous system of routing the invoices through purchasing to receiving to accounts payable.

9. One purchasing department record and follow-up card, printed on index card stock for vertical filing. This copy supersedes the purchasing department alphabetical file copy formerly kept in loose-leaf book form, and has been found more convenient and useful. The lower portion provides for a record of receipts against the order as on copies 3 and 4. The upper edge of the card contains a form for the entry of complete information as to date goods are needed and vendor's promise of delivery, also a record of follow-up action taken to insure that delivery and of the vendor's response to such action. Thirty-one divisions along the top edge provide for visual signalling of dates for follow-up. These cards are filed alphabetically, by vendors.

"Follow-Up Purchase Order"

10 and 11. Two identical copies of a "Follow-Up Purchase Order." These are like the original purchase order except for the color, which is white, and are prominently rubber stamped in large type: "Follow-Up Purchase Order—Do Not Duplicate." On the lower section of this form there is a printed reminder to the vendor of his delivery promise and an urgent request for immediate shipment. These are kept in a tickler file in the purchasing department, and are sent out as required according to follow-up dates indicated on copy 9 in the event that shipments are delinquent, without the necessity for dictating a special letter or making detailed reference to the original order, since all information appears on these copies. The response to such follow-up is entered on the purchasing department record card (9) so that the status of the order and delivery promises is complete at all times. This system provides for two routine follow-ups; beyond that point, special action would presumably be necessary, but in the ordinary course of events the complete procedure has been taken care of with the single typing of the master copy.

12. One copy (green) which is sent to the priorities department for the purpose of recording quantities and value against allotments of material.

In addition to these standard copies, there are two more forms for use in those cases where patterns, dies, etc., are sent to vendors for the purpose of filling the order. Formerly this required a special form and procedure, both in shipping and recording or accounting for the equipment. Under this system, the procedure is included in the regular routine and definitely identified with the specific purchase order and factory order numbers. In typing the master copy, the purchasing department indicates for the duplicator

Continued on page 324



"Tell Mr. Shaw I'm tied up for three months."

THE PRICE CONTROL FUNCTION DURING RECONVERSION

OPA is heading toward a more liberal pricing policy on civilian goods to encourage speedy reconversion, and is counting on competition to temper the need for post-war price fixing

By A. N. WECKSLER



CHESTER BOWLES
Price Administrator

ONLY a short while ago, the subject of reconversion was shunned as unsavory and unpatriotic. Currently, reconversion is in the forefront, with full realization that decisions made now will pattern the economy for years to come.

The few faltering steps that have already been taken toward reconversion are no indication of how the job will be done. The one significant factor, however, is that Government agencies are alive to the necessity of facilitating the process.

Office of Price Administration officials, who had been in the habit of painfully haggling over each quarter percent, have been won over to a more liberal reconversion pricing policy. The truth is that the wheels of trade have to begin turning quickly if prices are to be kept at a reasonable level. Mass production is necessary to keep the unit price of consumer goods down. However, if OPA should succeed in depressing price ceilings at the outset, only to accomplish a net effect of slowing down production, the result will inevitably be higher prices.



JAMES F. BROWNLEE
Deputy Administrator for Price

Prices and Costs

The present policy appears to be aimed at giving industry its head—giving manufacturers a liberal allowance for their overhead, material and labor costs, in establishing prices for products of reconverted industry. Competitive marketing will be counted on to police prices and to bring them down. The OPA policy appears aimed at encouraging such competition by making manu-



DONALD H. WALLACE — JOHN D. SUMNER
Economic Advisers to the Deputy Price Administrator

facturing an attractive venture.

This does not mean that OPA has suddenly gone berserk and will permit manufacturers a free hand to boost prices to any figure they see fit. Prices will have to bear a relationship to cost, with profits pared down to a controlled percentage. This percentage will be based on average percentage profits of a base period. The popular basing period used by OPA has been the 1936 through 1939 average. The year 1941 is likewise considered a significant guide-post in view of the high level of production during that year.

The liberal phase of OPA reconversion policy will be primarily that OPA will establish ceilings for reconverted products which, in effect, guarantee a profit to their manufacturer.

This policy will not in any way guarantee the price position of the high cost, inefficient producer, as in such cases competition by efficient producers will tend to force the price issue, product by product. However, the high cost producer will have an opportunity to get into the swim—and compete.

It is generally accepted that there will have to be a continual adjustment in the pricing policy. Current conditions still reflect small and spotty reconversion. Even though there are substantial cutbacks in war production, reconversion will still be on a company-by-company basis. There is a problem of unemployment, but cost factors are still abnormally high due to short production runs, overtime labor rates, and the necessity of using substitute materials.

These elements of cost create an initial bulge in costs, and one of the considerations in reconversion pricing is whether this bulge should be permitted to be reflected in prices.

The reconversion pricing problems—while seemingly highly complicated—tend to offer their own solution. First, there are a number of consumer commodities which have been manufactured throughout the war period, and the price ceilings established for these commodities have been adequate. It is a reasonable assumption that ceilings that have been satisfactory for production which has been in process will have to be adequate for manufacturers who are reconverting for the purpose of competing with the established trade. In such instances, the initial price bulges will not be a factor in reconversion pricing.

The real problem in pricing is where commodities have been out of production and where producers are faced with the higher labor costs, material costs, overhead and merchandising costs which have developed during the war period.

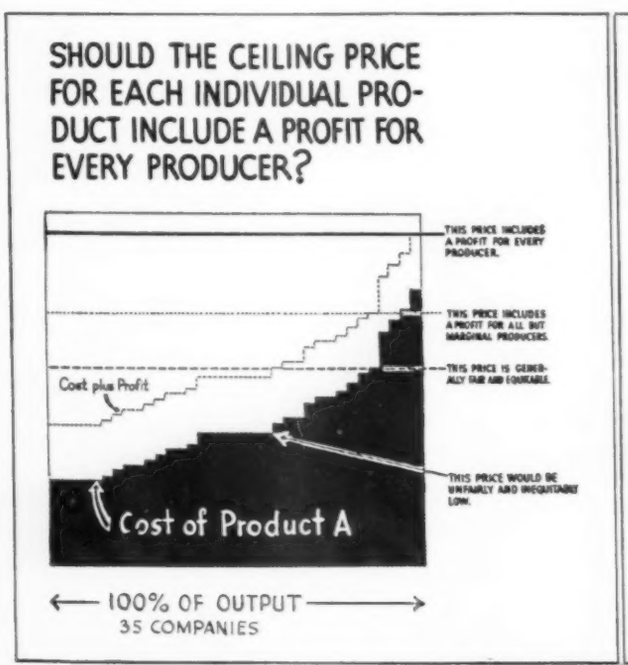
Questions of Policy

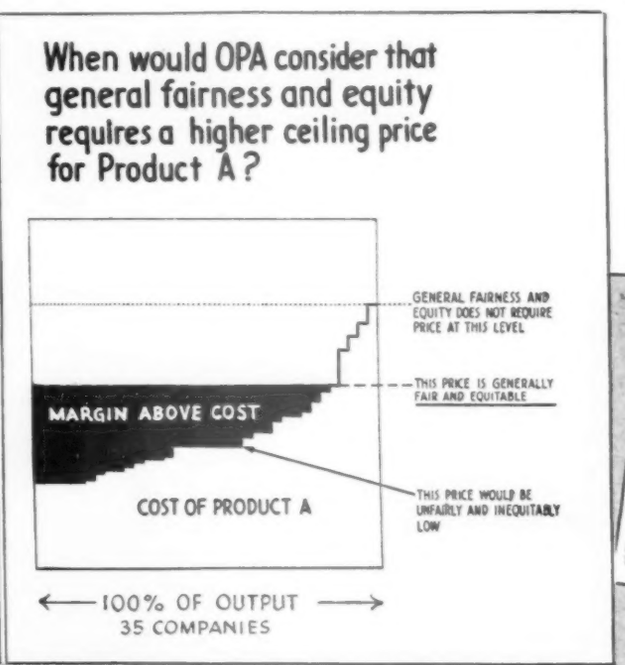
In establishing a company's price for a reconversion product which has been off the market, OPA will have to review the individual company position in the light of the following main questions of price policy:

1. Should there be an initial bulge in prices to allow for temporarily high costs due to low volume, overtime pay, substitute materials, etc.?

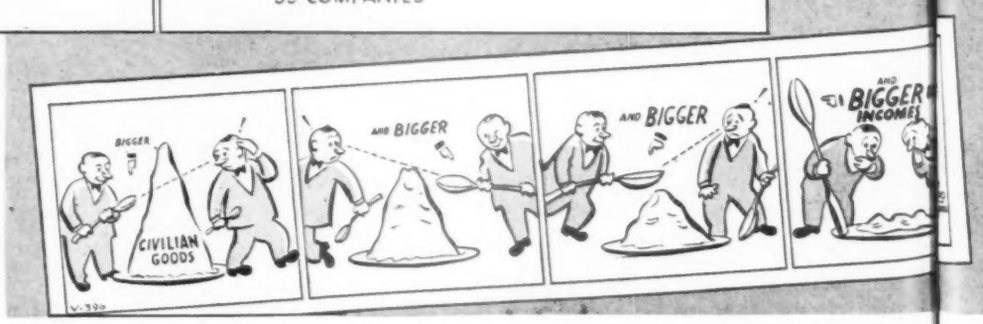
2. If not, what level of output should be assumed in estimating costs and establishing a price? Prewar? 1941? Estimated future volume?

3. What kind of costs should be recognized? Reconversion costs? Overtime? High cost due to low volume?





Price control policies must consider the position of all producers, but the objective is general fairness, not the plight of the marginal company.



The government's campaign against inflation has included a popular education in elementary economics.

4. How should costs be estimated?
   a. Company estimates of future costs?
   b. Adjustment from recorded costs in, say, 1941?
   c. Estimates derived from current costs of a comparable commodity?

5. What about recalculation? What will be the effect of company-by-company pricing on price relationships within an industry?

Here again, OPA's course will be guided largely by experience of the past. OPA has often established high price ceilings to attract a high level of production, and then as supplies became plentiful, pressure on prices dropped to a vanishing point. This type of action has been most obvious in the pricing of agricultural commodities, but it has also operated in the instance of such war goods pricing as has come under the aegis of OPA price fixing. In the latter cases, OPA has given military items wide pricing latitude, but the procurement services have shaved these prices down when supply conditions made it possible to establish a normal buyer-seller relationship.

The real problem will be on the development and administration of such a flexible pricing policy as to encourage production on the one hand, without on the other permitting a level of pricing that will tend to further boost costs of production before the general reconversion of industry is accomplished. Once consumer goods are available on the trade marts in quantity, OPA's functions will be at an end insofar as price control is concerned.

An integral part of the problem of controlling price is the tendency of manufacturers to produce such items for a scarcity market as provide the best profit return. The highest profit return per unit generally is obtained in the higher price lines.

Ultimately the manufacturer may obtain the largest profit return through the production of low-cost items, but this latter condition results only when capacity production is possible.

To insure production of low-cost lines, OPA at the outset of the reconversion period is likely to be more lenient in pricing such lines than in actions affecting high-cost lines.



The wartime scope of price control has embraced the entire commercial system.

Long Range Program

In summary, it appears that:

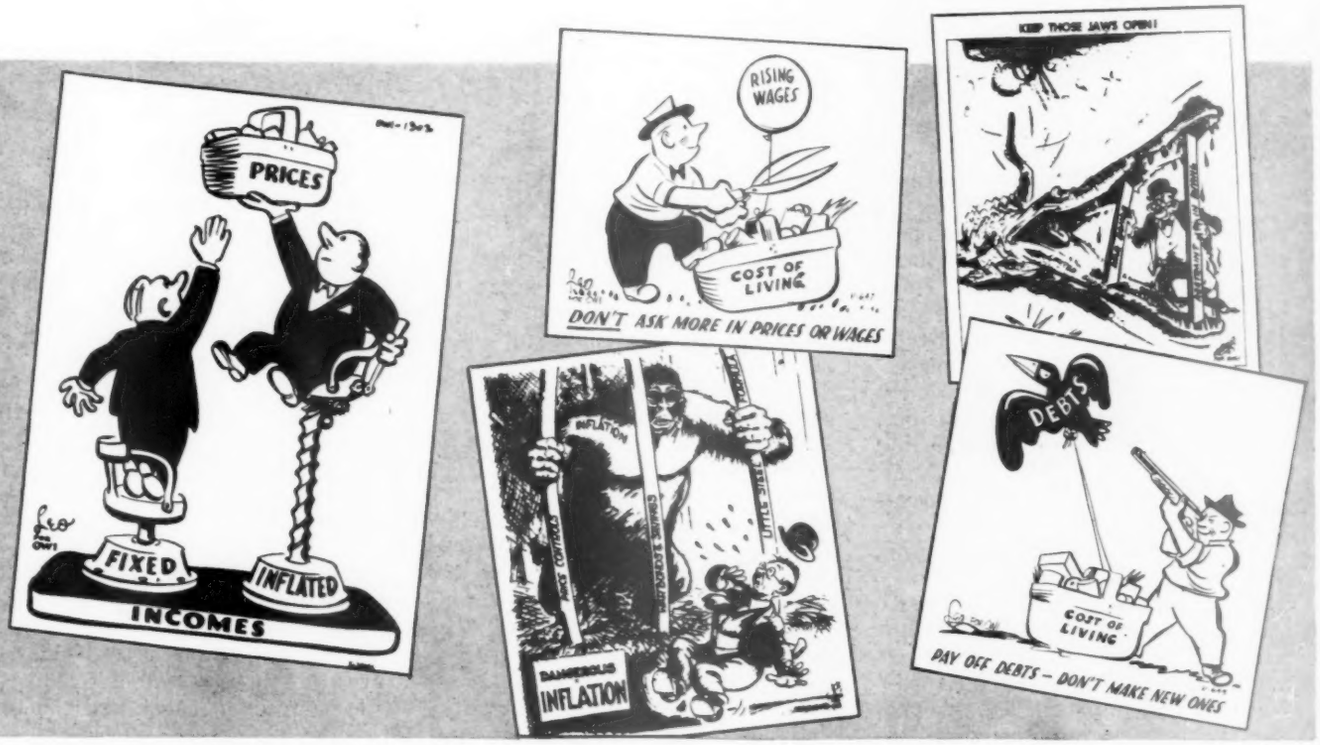
1. Reconversion pricing is a major facet of the overall problem of reconversion, and price ceilings will be sufficiently liberal to encourage production.

2. OPA prices will make full allowance for such higher costs as have developed during the war period, even to the point of compensating for a further adjustment in the basic wage rate (an adjustment of the Little Steel Wage Formula).

3. OPA will take into account the abnormal costs encountered during the preliminary stages of the reconversion period.

4. Overall objective will be to maintain prices of goods now being manufactured at a constant level while adopting a flexible and liberal policy in the instance of reconversion products. By holding commodities which are in production at a constant level, the danger of inflation is minimized. With a liberal approach to new production, OPA can encourage a high level of competitive production, which in turn will restore a normally competitive market.

5. With the restoration of normal competition, OPA will consider its price control functions at an end.





Carved out of the virgin jungle, far from supply and equipment bases, America's fighting men have established efficient military stations all over the globe.

Buying FOR A CONSTRUCTION

By RAYMOND P. DAY

SCATTERED over the face of the globe from Australia to Europe and back again are bases the Americans have built. Considering the variety of materials that have gone into any one of these camps: taking stock of priorities, co-ordination and transportation; the purchasing of the right amount of construction machinery and supplies was a tremendous job. Looking backward, we wonder how they ever did it.

Many of the earlier projects were built by American contractors, with civilian help, operating dangerously close to war fronts. They did their job well. Unlike the Army and Navy, drawing whatever is needed from a stock of material already available and stored in warehouses, these civil contractors had to buy the machines, materials and literally thousands of items and then run the same risks in having them sunk on the way across as any armed forces construction job.

There was always the problem of purchasing "overages", or extras, and it was always a headache. There are always men in authority who fail to see the necessity for procuring anything beyond the bare specification requirements. The supply man on a construction job must visualize waste, unforeseen emergencies and transportation losses. Ironically, the better he does his job the more he becomes a forgotten man.

How Jobs Grow

It is doubtful if any construction job ever done was built exactly to contract size, or was ever cut down. They start this way: In January the order comes through for 50 buildings and a flight strip. Before the 50 buildings are up, someone starts moving the troops in to occupy them. It looks like a better camp site than they figured, so 75 more barracks buildings and water development facilities are authorized as a contract extension.

While the Purchasing Agent is moving heaven and earth to get lumber, pumps, well casing, tools and other items he had no way of figuring before, an Air Force General decides to build hangars and repair shops as a further extension. This places the Purchasing Agent in combat with the entire priorities system, for a hangar is structural steel and anyone knows the difficulty in buying structural steel shapes.

This process of enlarging goes on and on. A sewage disposal plant is authorized. Power generating plants must be set up. Long before the company is ready to receive the Army-Navy "E" award for excellence, our Purchasing Agent is either a raving maniac or a downright scoundrel for stepping on so many toes.

Floating Stocks

The main headache, according to one good Purchasing Agent for a New York contractor building a Caribbean base, was shipping space. This was in the days when submarines were still a menace. Much of the equipment being used was excavating and drilling machinery, and replaceable parts were bulky and heavy. Several times, in those days, shipments of repair parts for Caterpillar diesel tractors were sunk.

Added to this, the contractor was more than be-deviled by the petty thievery of natives he had to use. Pliers, wrenches, carpenter tools—anything that could be concealed in a lunch basket was carted away. Multiplied by hundreds, the thefts became so serious as to create a critical shortage of tools. Through the contract manager and the base security officer, a more alert gate



(Official U. S. Navy photographs)

JOB

The civilian buyer for an Army-Navy project does not have an easy life

guard was established and all of the floating stock was intercepted.

Applied Psychology

The company was training natives to operate bulldozers, power shovels and drills, and for some time the natives were so rough that cable replacement was frightful. The Purchasing Agent, in defense, began buying preformed wire rope exclusively on the theory that it would resist sudden shocks because each wire in this new type of rope shares its part of the load equally with the others. His thinking was sound, because as soon as preformed rope was installed, operating life doubled over what it had been.

He and the equipment superintendent got the natives together and explained that this kind of cable was almost impossible to get, and that much more care would have to be shown in using it. Actually this was a bit of psychology. Preformed rope is available for general use, but believing what the superintendent said, the natives took it to heart because the new rope was easier to install and handle. They began nursing wire rope, and in a short time the wearing life of shovel hoist lines jumped up to 750 hours, where it belongs.

The purchasing man's job is always more than buying. It is protecting what he buys, seeing to it that the supplies are judiciously used. This man established a central warehouse system integrated with the prospective use of his supplies. Machinery parts were stored and issued from a warehouse next door to the heavy equipment shop. Building materials and the carpenter shop were placed together. Electrical supplies were made convenient to the electrical shop.

Controlling Material

Once each day, the record of supplies issued to these necessary key departments passed over this man's desk. He was particularly brilliant at his job. In a half hour he not only had the supply needs of the job at his fingertips but he could spot waste and take the steps necessary to correct it. Moreover, if his subordinates slipped a little in forgetting to request necessary replacements of stock items, he was in the right position to remind them. He controlled all miscellaneous requests for material by insisting that they be routed over his desk. In passing on the validity of material requests he developed a thousand ways of saying "No".

The author of this article writes from practical experience in purchasing for field construction of military bases. He is now a Chief Petty Officer with the Seabees, somewhere in the South Pacific.

Winning the "E"

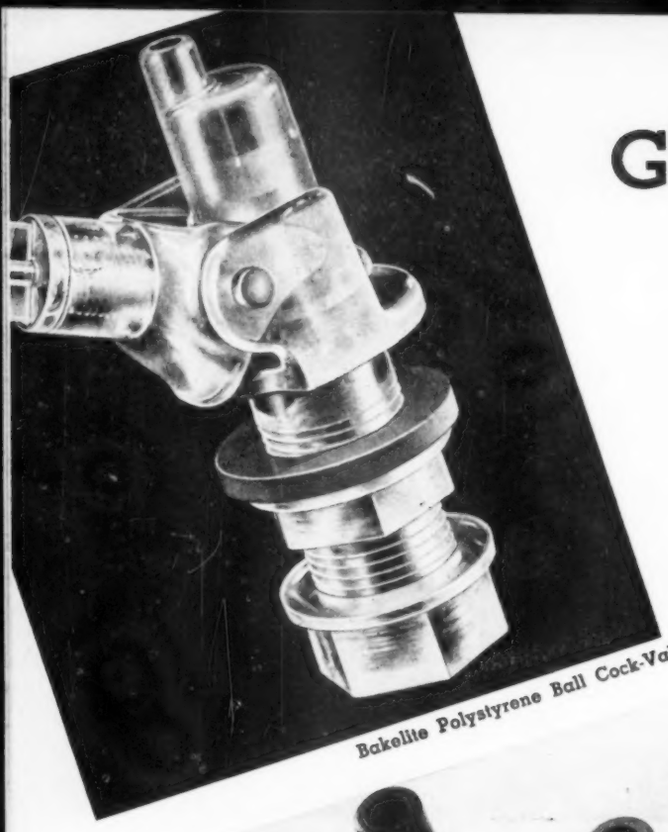
In seeing that the materiel was used wisely where it belonged, his department helped to get the coveted Army-Navy "E" for his company, and it finished the job with a minimum of surplus parts and material.

Purchasing for Army and Navy construction by the engineer branches of the armed forces is also difficult, but because of the extensive nature of these operations, central supply departments can be established for a specfic theater of operations. Materials and supplies are simply issued to the subordinate supply warehouses and all unused stock (there isn't very much of it) can be returned for credit. Priorities are now routine and easy to get.

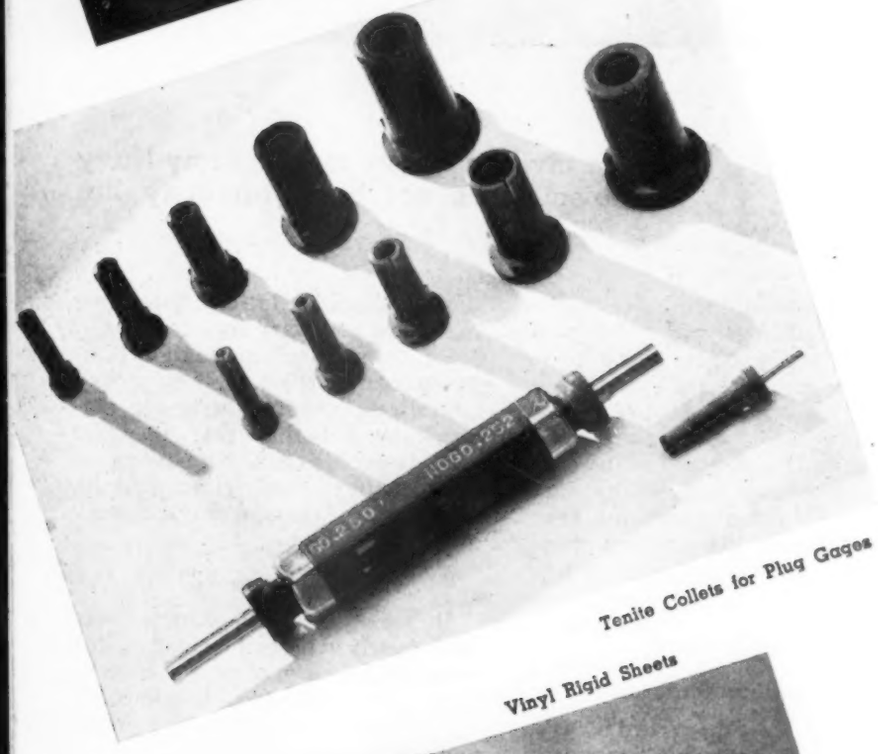
It is still the civilian purchaser who is gradually going crazy doing his job excellently. He has it the hardest.

GET ACQUAINTED WITH Plas

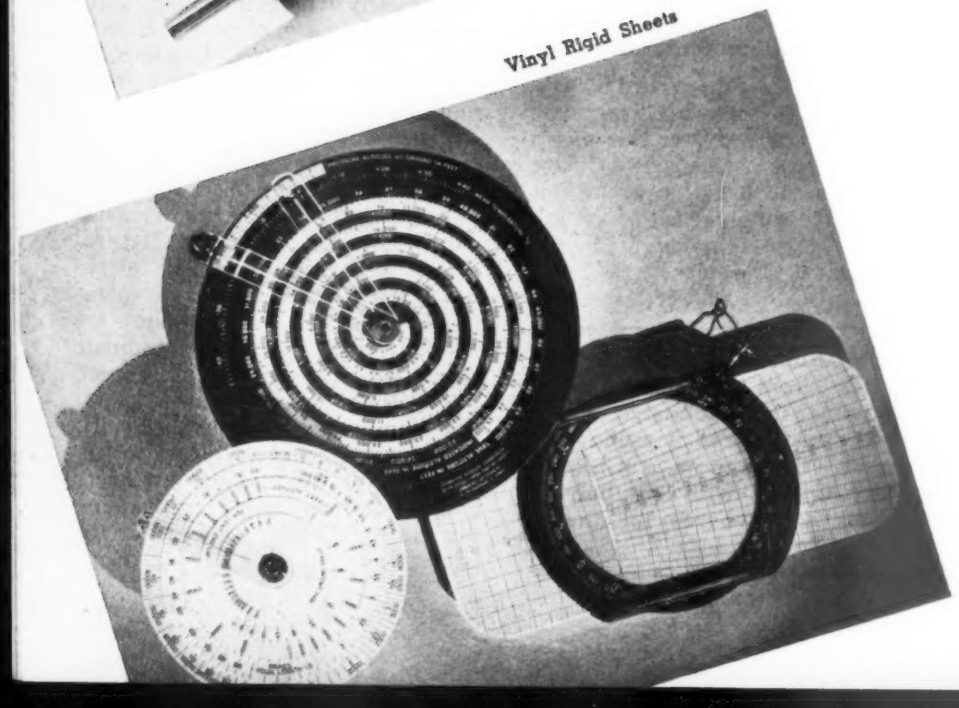
Part TWO



Bakelite Polystyrene Ball Cock-Valve



Tenite Collets for Plug Gages



Vinyl Rigid Sheets

IF Mark Twain had discussed plastics he undoubtedly would have said that everybody talks about them but nobody knows much about them. Veteran molders will tell you there is more truth than fiction in that conclusion, that but few people have a clear conception of plastics and their uses, and that there is no one who knows all there is to know about all the plastics.

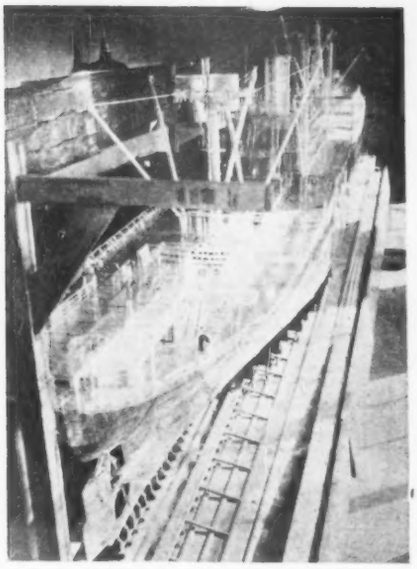
In the first article of this series, five salients were outlined, an understanding of which is essential in approaching the plastics subject. First, plastics are widely diversified. There are a score of base types made up of two widely differing family groups: (1) the thermosetting plastics which, after going through the process of heat and pressure, are set for life; and (2) the themoplastics, which can be reheated and remolded almost indefinitely. The re-use quality of the thermoplastics has hatched thermoplastic scrap companies and it may be that in the days to come the peripatetic junkman will fill streets and alleys with the strains of "Any rags, any iron, any plastics today?"

Also it was emphasized that the types of plastics vary as much as does the human race. They differ in weight, toughness, dimensional stability, molding qualities, reaction to temperatures, moisture absorption, color values, and such things as resistance to alkalis, acids and other corrosives, electrical qualities, and eye appeal. Consequently they differ in utilization.

An understanding of the cost factor is most desirable. Some plastics are relatively low in cost, and some that you feel would be ideal for a certain product you have in

tics

By GEORGE E. HENRY



Lumarith Victory Ship Model



Resistoflex Vinyl Tubing

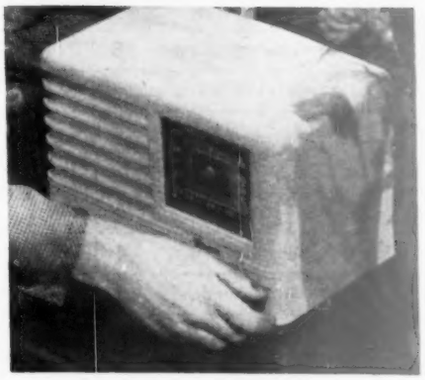
mind might be as high as 75¢ a square foot for a thin sheet, or leap over the dollar mark for molding materials. Production costs, depending upon design, might make for high unit costs, because molds and dies run into real money. Generally unless a run is over 5,000 units, and unless the specific advantage of merchandising appeal or use-benefit warrant, the unit cost may be too high and competitively at a disadvantage with metals and low cost stamping, spinning, casting, and so forth.

This by no means implies that plastics will be relegated to the bleachers after Hitler and Hirohito no longer are impediments to the pursuit of happiness, for plastics are now firmly established on a rapidly expanding beachhead of commerce and industry. They will continue to replace wood, glass, metal, clay, shellac, textiles and rubber in a myriad of uses for the very simple reason that they have ably demonstrated that they are better fitted for those uses. It is purely a matter of the survival of the fittest. And it must not be overlooked that the old line materials were utilized in many things for which they were not the ideal material, and in numerous of these uses plastics of the right type have demonstrated a marked superiority. No other material offers the unique combination of desirable qualities that are to be found in synthetic plastics. The nearest approach may be latex, or shellac, with which laboratory wizards have long been dallying.

Still another warning is also of the utmost importance. After you have absorbed all of the information in the highly specialized literature available from manufacturers, do not think that all you have to do is to specify such and such a plastic and get a completed job that is satisfactory from the standpoint of the product, the sales manager, and the boss. You will save time, money and "face", and contribute to the profitable utilization of plastics by your company, by consulting with men who have the "know how" of plastics molding, fabrication, lamination, casting, extrusion, and other processes.

Each of the different kinds of plastics is distinctly individual. Each has characteristics peculiar unto itself, and one or more of these may better adapt it for specific uses for which no other plastic is equally well fitted, or these characteristics may bar it from certain contemplated uses.

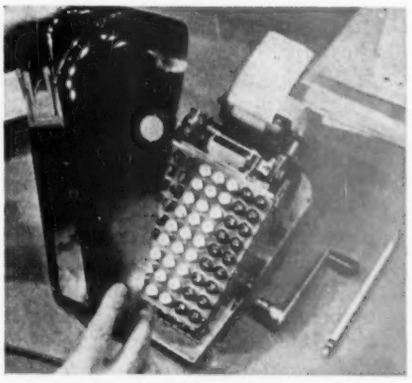
This does not mean that plastics are restricted to limited uses. There are "general use" plastics which of themselves are quite competitive where there is no need for special physical, chemical, electrical, dimensional or non-inflammable qualities, the determining factor in selection centering around moldability, mold costs, and material costs. This family competition is being broadened as new and improved base products and new formulations are introduced. The introduction of the low cost polystyrenes and the butyrates with their toughness brings serious competitive problems for some of the better known plastics. Cellulose nitrates have been taboo for many uses because of the inflammability. The Hercules Powder Company recently introduced a cellulose nitrate that will not support flame. Cellulose acetates and some other types



Bakelite Urea Molding Material



Plexiglas Goggle



Bakelite High Impact-Resistant Phenolic molding material

PLASTICS COMPARATOR

THERMOSETTING MATERIALS	PHYSICAL													CHEMICAL				ELECTRICAL				
	Shock Resistance (Toughness)	Mechanical Strength	Cold Flow	Hardness	Heat Resistance (Continuous Heat)	Dimensional Change on Aging	Thermal Insulation	Specific Gravity	Flammability	Appearance (Color Possibilities)	Color Stability	Water Resistance	Alkali Resistance	Acid Resistance	Organic Solvent Resistance	Loss Factor 60 cycles/sec.	Loss Factor 1 megacycle/sec.	Resistivity	Dielectric Strength	Utility Around Inserts	Ease of molding
Phenolics General Purpose	8	2	1	2	2	5	6	6	3	6	8	5	7	7	2	8	4	7	8	4	1
Phenolics Low Loss	8	4	1	2	3	3	9	9	1	8	9	2	7	7	2	5	3	4	7	4	4
Phenolics Heat and Shock Resistant	4	3	1	2	1	2	9	9	1	9	9	3	7	7	2	9	7	8	9	2	6
Phenolics Acid and Alkali Resistant	9	5	1	1	3	4	3	5	2	6	9	3	3	4	1	7	4	7	9	5	4
Phenolics Shock Resistant	2	3	1	2	4	6	6	6	3	9	9	7	7	7	2	7	4	7	9	1	3
Phenolics Transparent	7	2	1	1	4	4	3	5	2	4	6	4	5	5	1	7	4	7	8	5	6
Melamine General Purpose	8	3	1	2	4	5	-	7	3	5	1	5	5	5	2	6	6	7	8	8	5
Melamine Arc Resistant	8	5	1	2	2	4	-	8	1	8	5	3	5	5	2	7	6	6	6	4	5
Melamine Shock Resistant	4	3	1	2	4	6	-	7	3	6	3	7	5	5	2	7	6	7	9	3	5
Urea	8	2	1	1	5	7	8	7	3	5	1	8	7	8	2	6	4	9	8	8	5
THERMOPLASTIC MATERIALS																					
Polyethylene	1	9	9	9	9	1	7	1	9	5	1	1	1	1	4	1	1	1	1	1	7
Polystyrene	6	3	3	3	6	1	1	2	8	2	2	1	1	1	5	1	1	1	5	9	1
Vinylidene Chloride	4	4	5	5	6	4	2	8	2	3	5	2	4	3	4	5	5	3	6	6	9
Vinylchloride Copolymer	4	1	4	4	8	4	4	6	3	3	3	3	2	2	5	4	4	4	7	6	4
Methyl Methacrylate	6	3	4	4	7	7	5	4	8	1	1	5	7	5	7	6	5	3	7	9	5
Nylon	4	1	4	3	5	5	7	3	4	5	5	8	4	8	4	4	5	5	7	5	9
Ethyl Cellulose	3	5	6	6	6	8	5	3	7	4	4	8	3	8	9	4	4	6	5	5	3
Cellulose Aceto Butyrate	2	6	6	5	6	8	7	4	7	3	3	8	8	7	8	5	5	7	8	6	2
Cellulose Acetate	3	6	7	7	7	9	7	6	7	3	3	9	9	9	8	5	5	7	6	8	4
	F	FO	F	F	F	O	F	F	F	O	F	F	FO	FO	F	F	F	F	F	O	O

Copyright 1944, Bakelite Corp.

F=Fact
O=Opinion

Nos. 1-9 represent highest to lowest in order of merit. Relationships are qualitative and variations in formulation may alter position on chart.

lose dimensional stability or shape or usefulness in temperatures above 180° F. Both the Bakelite Corporation and the Monsanto Chemical Company have developed a modification of polystyrene that is unaffected by boiling water. Thus the world of plastics is changing and improving.

There is possibly no better immediate exposition of the diversfied types of plastics and their uses, than the plastics products in your office, factory or home. The electric wiring sockets and plugs are one of the phenolic types, with high dielectric qualities, non-inflammability, and low cost. Your fountain pen may be a cellulose nitrate or acetate, selected because of toughness and resistance to moisture and corrosion. That pastel tinted tumbler in the washroom is a urea formaldehyde selected by the chairman of the board of directors of your household because it matched the guest towels—not necessarily because it is reasonably strong and resistant to the solvents and liquid articles in your pharmacopoeia. The rules or scales on the draftsman's desk may be vinyl rigid sheets or cellulose acetal butyrate and of dependable dimensional stability. Your telephone is a phenolic formaldehyde and you know the abuse it takes and the hot stuff that comes through it. The padding on your office chair may be sponge Koroseal. In your radio you will find special formulations of the phenolics, or the polystyrenes, selected because of their dielectric and low-power-loss factor. The reflectors on the luminaires may be an acetate or a urea-formaldehyde, light in weight, tough, and with high reflection qualities. The housing on the office machine may be a cellulose acetate butyrate with cams and bearings of laminated phenolics. The protective covering over the multitude of gages in the factory may be of methacrylate—transparent as optical glass, half as heavy, and practically unbreakable. These objects were not "just made" of plastics. They are made of certain types of plastics *selected* because of certain advantages inherent in them. The list could continue for pages. By the development of special formulations of the resin binders, fillers, etc., the properties of plastics may be materially enhanced to meet the requirements of certain uses, though increasing dielectric strength by the use of say mica fillers as in molded phenolics, will detract from toughness and

increase the specific gravity.

Obviously, a decision on the part of management to utilize plastics poses problems for purchasing and production. Recently a department head in a Brooklyn plant making electrical products, sent the Purchasing Agent a requisition for Textolite laminate, oblivious of the fact that Textolite is made in at least 28 different types for a wide variety of uses ranging from general electrical parts to water lubricated bearings. The Purchasing Agent, who by the way is giving much study to plastics, made inquiry as to the proposed use of the material, and then consulted with a General Electric plastics representative to determine the kind best suited for that use. There are literally hundreds of plastics formulations in addition to the general purpose compounds. And in addition to the molding compounds there are sheets, rods, tubes, special shapes and laminates, and the sheer resins.

Qualities Vary Greatly

Many persons make the common mistake of attributing to all plastics, the general terms or characteristics that are so lightly applied by salesmen and advertising men subject to interpretation by technical data that is virtually "Greek" to the average layman or business man. As previously stated, these qualities may vary greatly in differing types of plastics and special formulations, and the use of plastics demands an end-use analysis of the product or part in which a plastic is to be used. The following analysis of some of these general attributes will help to gain an understanding of why it is necessary to get acquainted with plastics.

Physical Strength

Physical Strength. As evidenced by your telephone, the hand and power tools with plastic housings or hafts, the family vacuum cleaner, plastic toys and hundreds of other products that are subject to rough treatment, molded plastics have adequate strength for a stupendous list of daily-use products where high temperature (200° F and up) and structural strains and stresses are not involved. A special article will treat of the laminates, some of which —weight for weight—have greater strength than aluminum alloys they have replaced.

The Strength Factor

This factor of strength is an important one. It is a combinaton of tensile, compression, flexural, shearing, and other physical qualities. From a general standpoint, the quality that has given plastics their extensive usage is their toughness or impact strength. It is a quality that varies considerably. Some plastics have low impact strength; others have a comparatively high impact strength, the range being from 0.24 ft. lbs. per inch of notch, to as high as 10 ft. lbs. per inch of notch for some of the special formulations, as determined by the Izod test.

It would be inconsistent to present here an array of puzzling data as to these physical qualities. However, the following figures may be of interest from a comparative standpoint. Stainless steel (18.8) has a tensile strength of 185,000 psi., and a compressive strength of 150,000 psi. A good hard rubber has a tensile strength of about 10,000 psi., and a compressive strength of say 12,000 psi., plus an Izod impact of .05.

The tensile strength of molded plastics, easiest identified as those used in commercial products, ranges from 3,000 to 8,000 psi. and the compressive strength ranges from 8,000 to 30,000 psi. One of the laminates is reported to have a compressive strength of 60,000 to 70,000 psi. and 30-50 Izod impact.

Plastics Properties Chart

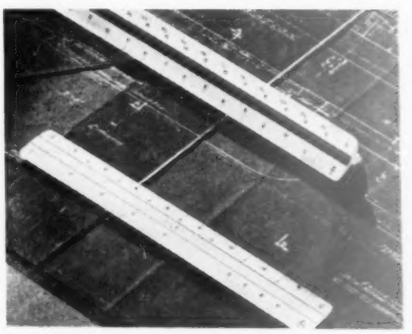
These figures are quite general. A valuable guide known as the Plastics Properties Chart, which is described as being a complete authentic summary of molding, physical, chemical, electrical properties of some 50 plastic materials, plus an index of trade names and manufacturers, is published in New York. The sheet measures 23″x30″, and it sells for $1.50. It is a good investment for any one who is interested in plastics, for it presents all this detailed data in a compact easy-to-follow form.

Continued on page 304

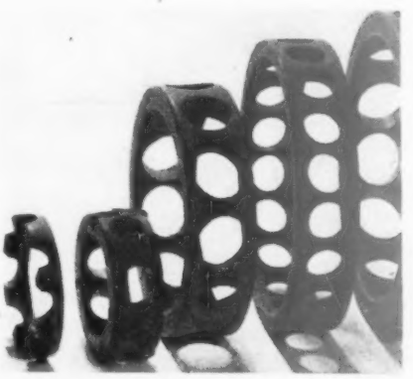
To help you get better acquainted with plastics, you will find in the "Know How" section of this issue of PURCHASING, a list of some twenty manufacturers publications that are the nucleus of a practical and helpful library on plastics. Further listings will appear in the November issue. Check the coupons and we will get the material for you.



Lumarith—Cellulose Acetate



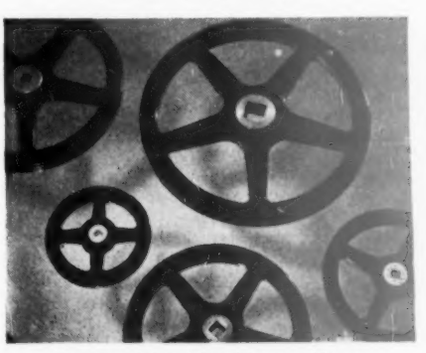
Tenite Scales



Micarta Ballbearing Retainer Rings

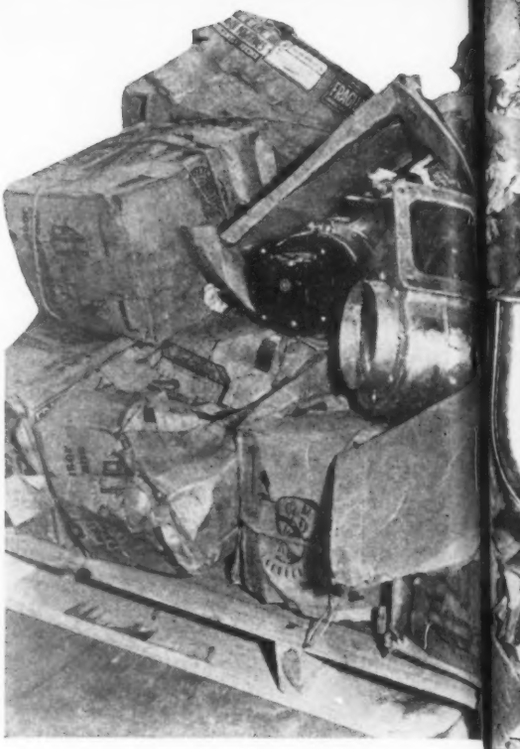


Tenite Safety Goggles



Kys-Ite (phenolic) Valve Wheels

PACKAGING AND PALLETIZING



By COMMANDER G. W. FOOTT, SC USN

Officer in Charge, Field Operations Branch

Stock Division, Bureau of Supplies and Accounts

A pair of aces that is helping the Navy's Service of Supply to play a winning game for high stakes on distant battle-fronts

A SIMPLE wooden platform, which any handy man can put together in a jiffy with a hammer and nails and a few stout boards, is proving to be one of the most effective new American implements of war.

The Navy calls this gadget a pallet; its use, palletizing. Those are important words today. They denote big things—an innovation in the handling and movement of materials, a triumph in logistics, and results which are being reported daily in stirring news of successive Allied victories.

The pallet is carrying much of the material which makes these victories possible. Palletizing is enabling the Navy to move greater quantities of supplies longer distances in less time than Axis strategists ever dreamed possible. Thus, our fighting forces now are getting the supplies they need, where and when they need them, and what they are doing with them makes the prospects brighter for capitulation of our enemies much sooner than we dared to hope less than a year ago.

Problems Without Precedent

"Too little and too late," in what is essentially a war of supply, brought the cause of freedom perilously close to disaster in the early months of this war. Production of ships, planes, tanks, guns, and all the innumerable things required to equip and maintain a fighting force was taken in stride by American industry. We have the "know how" for production. But delivering these things to the fighting fronts was a problem wholly unprecedented in our experience. That was a case of necessity mothering invention.

In the First World War, when we crossed the Atlantic and landed in friendly ports equipped with docking and warehousing facilities, standard commercial packing and shipping practices were, for the most part, adequate for military needs. There was no driving necessity then for the development of revolutionary materials handling methods. Packaging and shipping practices changed little in that war and changed little in the intervening years of peace.

We fight a global war today. We have met the enemy in desert and jungle and Arctic seas, and our Navy—the first line of attack—has been called upon to clothe, feed and supply its fighting men under every possible extreme of climatic and operating conditions.

Handled Without Care

In amphibious attacks from Attu to Saipan, from Bizerte to Normandy, our fighting men storm in from the sea to win beachheads, and their supplies roll in with them through the surf. All the material needs of the men may be dumped on the open beaches and stand for days and weeks exposed to the elements. No wharves. No warehouses. Yet the quantities and varieties of materials that are landed make the supplying of the AEF of 1917-18 seem as simple, by comparison, as packing a picnic basket for a family outing.

Standard commercial containers, the domestic fibre carton and the lightly braced crate, could not stand the gaff under handling conditions of this war. There was no time to "Handle With Care" and "Use No Hooks." Supplies, no matter how packaged, took a beating—roughly handled by shippers and carriers, jolted on trucks, jammed into ships' holds or lashed on wave swept decks, dropped into lighters, manhandled ashore. Cartons disintegrated. Boxes smashed. Crates splintered. And the contents in many instances were damaged beyond use.

There was one period during the early days of the fighting on Guadalcanal when our Marines ate nothing but canned corn because the labels washed off the cans of food carried ashore through the surf, and every unidentifiable can that the cooks



In the early days of the war, much material was lost due to inadequate packing. Many of these urgently needed blowers, shipped in second-hand soap cartons, were damaged beyond use when they arrived at the Supply Depot.



This supply dump at an advanced Navy base illustrates what proper packaging and handling can accomplish in spite of the difficulties encountered in landing operations and the hazards of open storage in varied climates.

opened turned out perversely to be corn. The easy expedient of embossing the contents on cans ordered after that complaint solved the problem.

There were times when fighting planes could not take off from bitterly won airstrips because the spare parts sent out to "keep 'em flying" were so corroded and rusted by the humid climate that they were useless. Now proper corrosion prevention treatment and proper packaging results in delivery of spare parts ready for use in as perfect condition as they left the factory.

There have been many occasions since the Japs attacked Pearl Harbor when our fighting forces have lacked what they needed because supplies in transit to them were lost or damaged through inadequate packaging and packing and improper handling. Such losses could not continue.

Expert Advice

Responsible for the procurement, warehousing, transportation, and issue of most of the material needs of the Navy, the Bureau of Supplies and Accounts tackled the problem. Rear Admiral William Brent Young, SC, USN, Chief of the Bureau, pointed out that supplies lost through packaging failure were just as irretrievably lost as if sunk by enemy action. It was not enough to get what was needed, where it was needed, when it was needed. Those things also had to arrive undamaged and ready for use.

Research experts from leading laboratories and industry, packaging and packing men, shippers, traffic engineers—men with the widest possible experience and know-how—were called to the colors to work on this vital job. Given commissions in the Supply Corps, United States Naval Reserve, they were assigned to active duty in what was then known as the Containers and Materials Handling Section of the Stock Division of the Bureau of Supplies and Accounts in Washington. That group, greatly expanded in complement and function, now is included in the Field Operations Branch of the Bureau's organization.

These experts from civilian life, augmenting the small staff of long experienced officers of the Supply Corps, regular Navy, worked with similar groups of the Navy, Army and other Government agencies in developing new techniques and procedures which would give the maximum assurance of safe arrival of Naval supplies at the point of consumption regardless of the conditions encountered.

Impelled by the relentless necessity of war, these specialists studied, experimented, and designed in what is probably the most intensive concerted effort to lick a shipping problem in the history of transportation.

Progress in Packaging

It was a two-fold problem—(1) containers, the development of adequate protective packaging for all conditions, and (2) materials handling, the development of methods to move the greatest quantity of materials with maximum speed and economy of man-hours. Both phases of the problem were approached with the most expeditious combination of scientific laboratory experiments and practical field tests.

As a result, truly amazing progress has been made in packing and packaging as the Navy developed new specifications for containers. In cooperation with the paper products and fibre board industry, a weather-resistant V-Board was created. When combined with specially designed inner-liners of water-resistant paper, the strongest grades of V-Board could be manufactured into watertight containers which would protect their contents under periods of complete submergence in water and stand up under long exposure to rain and weather.

Special cans have been devised to preserve various products indefinitely; cans that will not rust or break under unusually severe conditions, cans that do not reflect sunlight to attract inquisitive enemy airmen to supply dumps. There is a

special can for the packing of emergency life-boat rations that is a unique research story in itself.

Waterproof paper sacks for packing flour, sugar, salt—even cement; boxes and crates so designed and constructed that they will withstand far greater stresses than former types—containers of virtually every type and shape and description to meet all kinds of specific needs have been developed to package the 700,000 different items which the Navy ships overseas. The Containers Section of the Field Operations Branch has drawn up specifications for packaging some 25,000 individual items of supply, and general specifications cover the other 675,000.

Standardization Helps

Standardization of containers is a significant phase of this work. An outstanding example is in the packaging of the Navy's clothing, small stores and textiles. The Bureau of Supplies and Accounts buys clothing, textiles and footwear at the rate of eleven and a half million dollars every week of the year. That adds up to prodigious quantities of merchandise.

Heretofore, containers of widely assorted sizes were fitted to standardized issues. Under the new system devised by BuSandA, the containers, themselves, are standardized in a minimum number of sizes to facilitate maximum use of storage space ashore and afloat, permit palletization of uniform loads, ease problems of container procurement, conserve critical materials, and save innumerable man-hours in loading and handling. Three container sizes—standard, half-standard, and quarter-standard now are used for the packing of clothing and small stores, and their dimensions are such that they fit the Navy's standard pallet in lots of 18, 36, and 72, respectively. They can be overpacked in groups or combinations in standard export containers to form a palletized container export load.

Repackaging of air cargo is another big subject under the containers heading. Currently, Naval overseas air cargo terminals indicate an average of 175,000 pounds of excess tare weight are being saved each month by proper packaging practice. At an average pay load per plane of 5,000 pounds, this saves 35 complete plane loads each month.

Packing of fresh provisions for export, and containers ranging all the way from a new type of hermetically sealed metal small arms ammunition pack to non-contamination drums for petroleum products, are among other innovations designed by the packing and packaging specialists of the Bureau of Supplies and Accounts. Each one of their war-necessitated developments has been created with a view to providing maximum protection to contents with the minimum weight and space. Undoubtedly, many of these developments will be utilized by industry for greater economy and efficiency in shipping after the war.

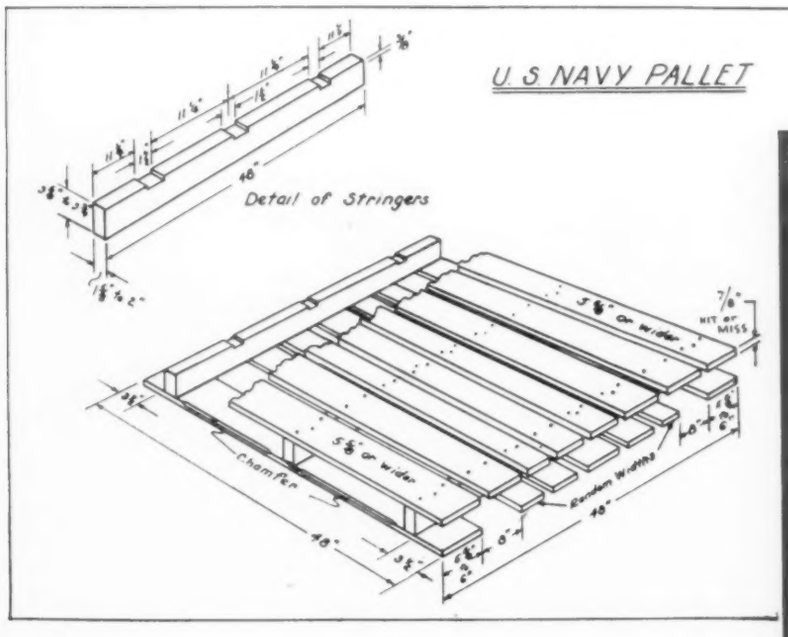
Enter, the Pallet

But no matter how good a container may be, packing and packaging is only half the battle. Those packages must be moved from point of origin to point of consumption with the maximum of speed and the minimum of effort. That's materials handling.

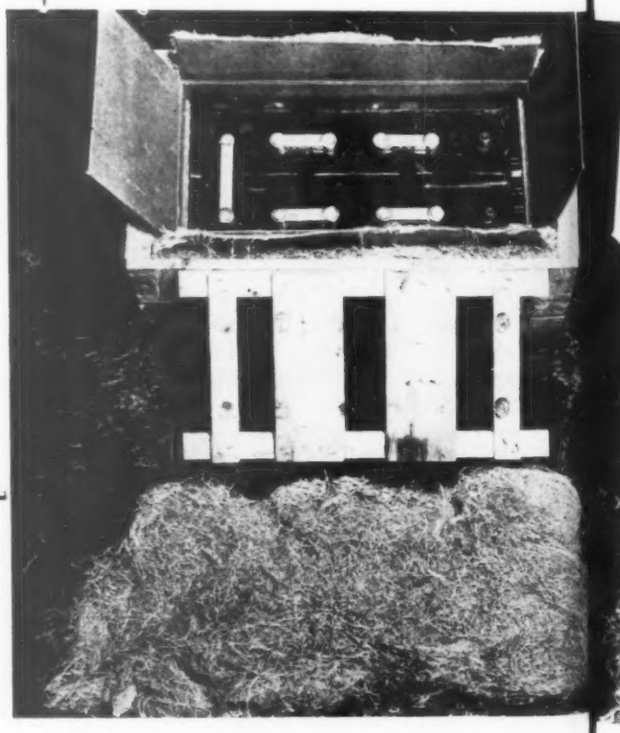
And this is where the pallet does its stuff!

How to move more boxes, barrels, cartons, crates, cylinders, sacks, and shapes and sizes almost ad infinitum, more efficiently than picking one up after another and putting it down the same way? That was the problem. Some method had to be devised that would be faster and require fewer men than loading and unloading single packages by hand. If the flow of supplies kept up with the speed of mechanized war, the maximum mechanization in the handling of supplies was an essential.

Like so much major progress, someone took hold of an old idea and gave it a new application. The



The U. S. Navy Pallet—keystone of all modern materials handling for the Navy. The dimensions and specifications were set after exhaustive studies of variety of items which Navy moves from supplier to the fighting fronts.



Example of the special type container developed by the Navy, which has cut to an irreducible minimum the damage to storage batteries in transit.

first Naval officer to adopt the pallet for materials handling blitzes is an unknown here. There are a number of possible claimants, but the idea was so old and so obvious that its full possibilities seem to have been envisioned almost simultaneously by a number of minds running in the same channel.

Definitely, there is nothing new about a pallet. Industry has used it for many years in one way or another. The Egyptians may have used it in building the pyramids. Every hod-carrier works with the principle by putting a number of bricks in one load and picking them up as a unit. That's all there is to palletizing.

Saving Space and Labor

Standardization and mechanization make palletizing work wonders for the Navy. The pallet of Navy specifications is a raised platform, 48″ x 48″, upon which packages are placed 48″ high. The stringers are spaced so the prongs of a fork lift truck will slide under the load so that it may be lifted as a unit. The four-foot square dimensions enable palletized unit loads to fit nicely in a box car and utilize space to the best advantage when stowed in warehouses or ships' holds. When the packages are secured to the pallet by steel strapping the load may be handled as a unit with the maximum safety to packages and their contents. Units may be tiered and moved two, three, or four high.

Palletizing means that one man, operating a powered fork lift truck, can move more tonnage in less time than many men could move manually. Some results of palletization and fork truck handling are amazing. At one Delaware plant it formerly required 100 man-hours to manually load a freight car with projectiles. With the projectiles in unit loads, one man with one fork truck does the job in 90 minutes. On another shipment of case goods, one fork truck operator unloaded a freight car in 6½ hours—a job which required 30 man-hours under the old method.

Fire brick, a particularly difficult product to ship due to small size, weight, and susceptibility to damage in shipment, yields to palletization neatly. At a plant in Pennsylvania, a carload of fire brick was loaded by the steel-strapped palletized method and shipped to the seaboard with a 60% saving in man-hours and a 50% saving in shipping cost.

Supplies Assured

Instances are innumerable where the Navy's specifications for materials handling, including proper packaging, packing, and palletizing, have proved their worth. Reductions in labor and shipping costs, important as they are, are the least significant results. The point that really matters is that mechanized materials handling by palletized unit loads is getting the supplies needed by our fighting men to the place they need them in time to use them to the greatest advantage against the enemy.

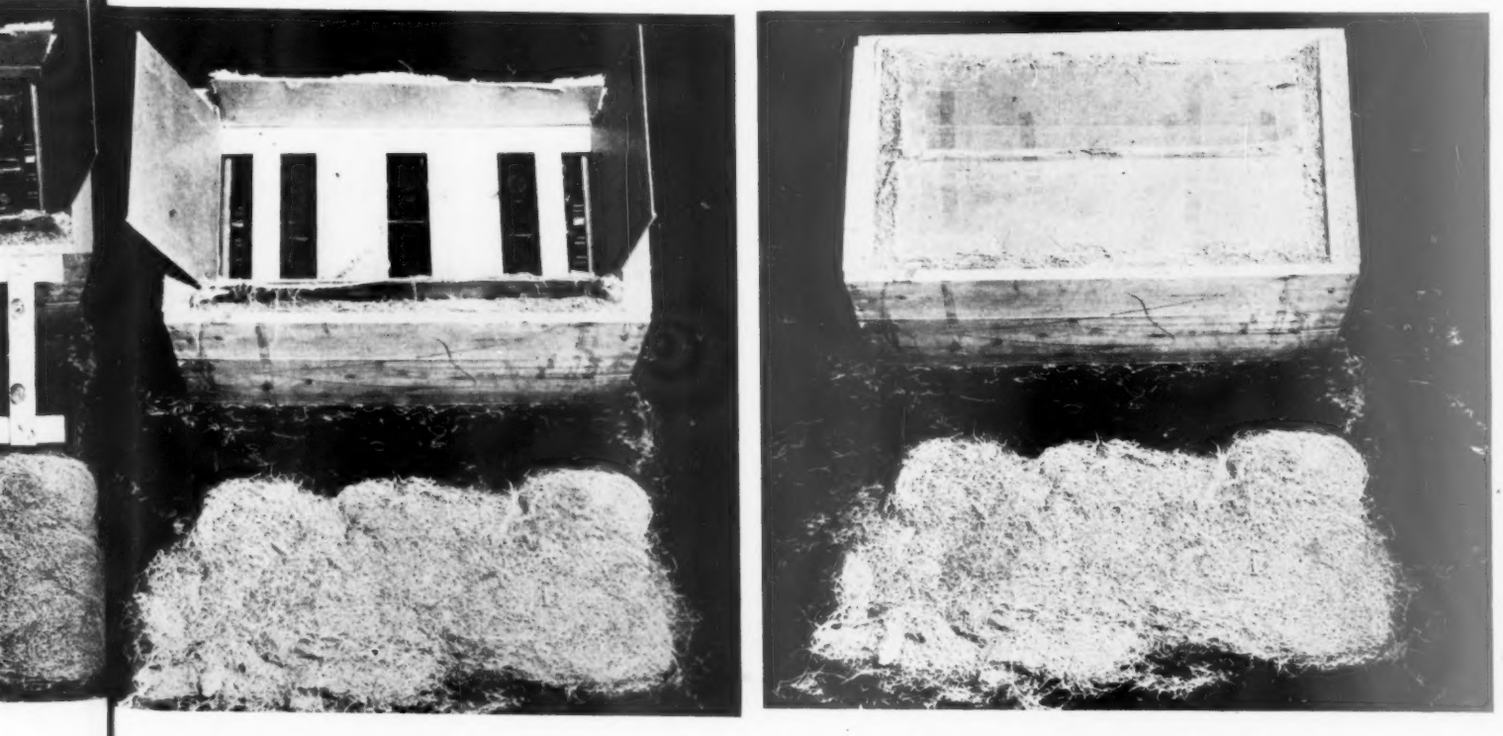
Selling the Idea

But despite its proved practicality and great superiority over former methods in moving virtually every type of packaged or bundled goods, palletizing is not yet universally adopted in the shipment of all urgent military needs. Far from it. Like all new ideas, or new improvements on old ideas, it requires a program of education to persuade those who will benefit most to accept it.

First of all, the Navy found it necessary to educate its own personnel to the advantage of innovations in packing, packaging, and materials handling methods.

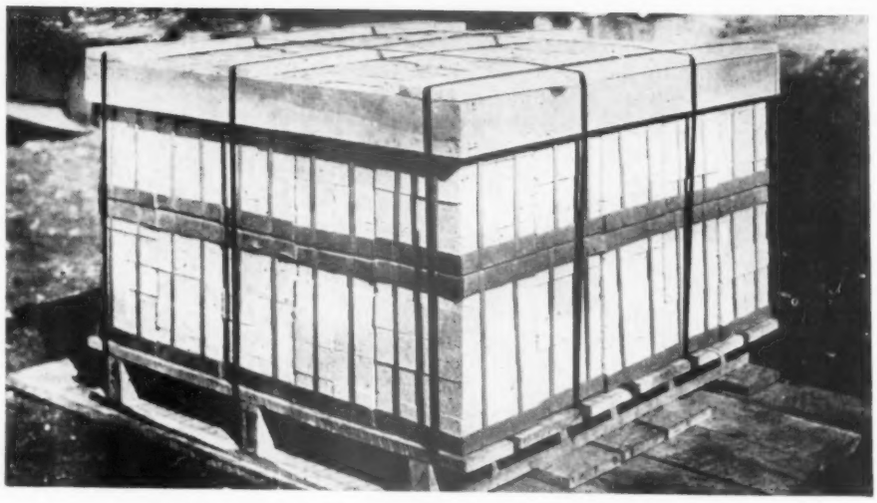
Early in November of 1942 the Navy opened a special packaging school at the Forest Products Laboratory in Madison, Wisconsin, where research of incalculable value in improving containers and packing methods has been conducted. Key personnel, commissioned and civilian, from the shipping departments of Supply Depots and Supply Departments of Navy Yards, have been sent to that school to learn how to pack shipments to withstand war handling.

Similar instructions are given at virtually all Naval supply activities, and a number of special schools have been established where selected officers are specially trained to get supplies to the fighting fronts un-



damaged and ready for use. One of the most important of these schools is the Naval Supply Operational Training Center at the Naval Supply Depot in Bayonne, N. J. There, officers of the Supply Corps are trained in the latest practices in the field of supply operations, emphasizing the best materials handling methods and how to pack, load, stow, and unload supplies most efficiently. The pallet is one of the principal professors there.

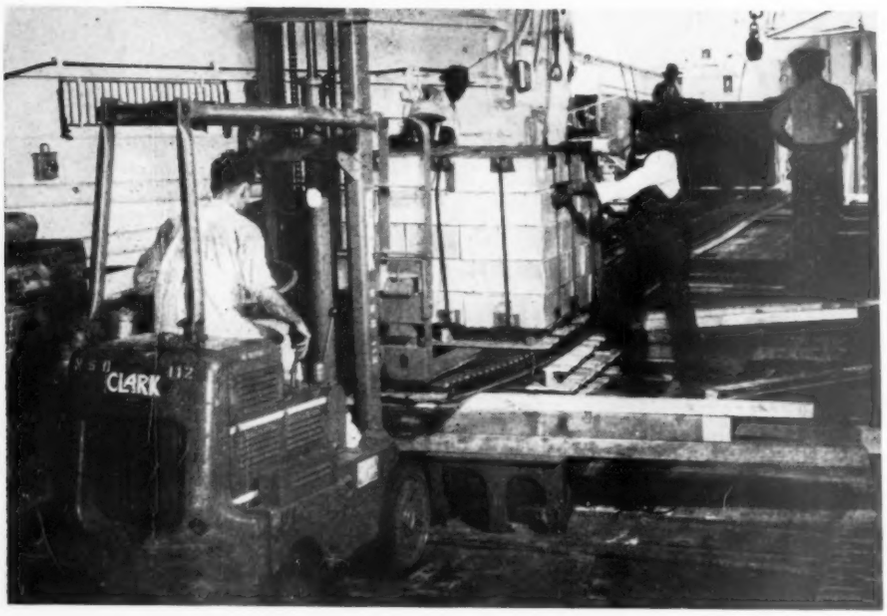
The Field Operators Branch of the Bureau of Supplies and Accounts is carrying the "gospel" of palletizing to the "field," as all activities outside the Bureau are designated, and has set up training schools in each of the 19 Naval Inspection Districts throughout the United States where Inspectors of Naval Materials are given a short course in the efficient methods of materials handling developed by the Navy so they, in turn, may carry the story into the plants of Navy suppliers.



Palletizing applied to a unit load of fire brick, normally a very difficult material to ship, with a high rate of damage and requiring excessive man-hours for loose handling



Palletizing is economical of space and labor in stowing cargo in ship's holds.



Loading of an LST is speeded by palletized unit loads and mechanical handling equipment.

Cooperation Needed

While the Navy is speedily adopting the palletized unit load, the maximum advantages of this modern materials handling method cannot be realized without the wholehearted cooperation of industry. Field representatives of BuSandA's Field Operations Branch are touring the country now, showing the advantages of the Navy way of handling materials, by motion pictures, lectures, and personal interviews to executives and plant managers in key plants every month. This intensive educational program is being coordinated by specially assigned materials handling officers in each Naval District within the United States.

The goal of this program is to obtain prompt acceptance of palletizing and the Navy's specifications for packing and packaging so all Navy supplies adaptable to palletization may be moved in unit loads swiftly, economically, and undamaged, all the way from the loading dock of the manufacturer's plant to the fighting lines overseas.

By this method, the maximum pressure of America's production miracles may most swiftly overwhelm our enemies, shortening the war, saving American lives.

Unquestionably, the lives of our men who are facing the enemy depend upon an uninterrupted flow of supplies. Victory comes in pack-

(*Continued on page* 314)

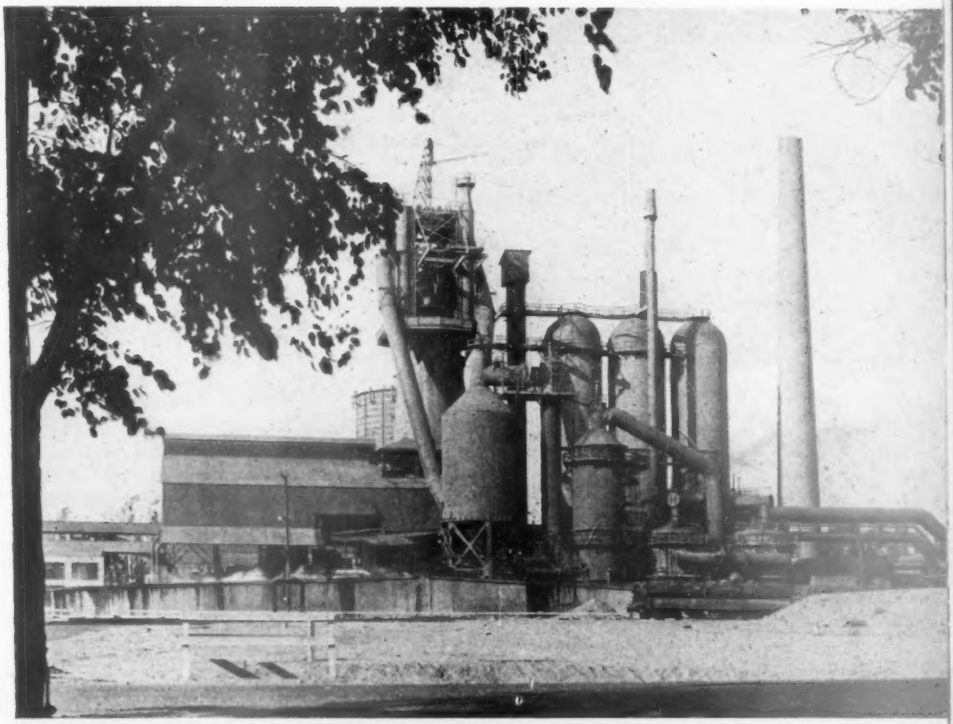
Purchasing West of the Rockies

. . . PAST, PRESENT and FUTURE

A comparison of purchase factors and industrial conditions as found in the East and the West, and an analysis of probable developments in this field

By ROBERT C. KELLEY

Director of Purchases
Food Machinery Corporation
Los Angeles



This 1200-ton blast furnace of the Kaiser Company at Fontana, first on the Pacific Coast, typifies the new industrial note in California's skyline.

AS A traveller throughout most of these United States during the past twenty years, I have frequently observed that Main Street in any town or city in this country is pretty much the same. For there you find a Woolworth, a Sears-Roebuck, Montgomery-Ward Store, a variety of filling stations of the national oil companies, all carrying the same brands and type of products. This condition is a tribute to the merchandising and distribution systems of our national economy.

The above condition is quite obvious to the average layman. But to get at the core of the industrial procurement problem and the manufacturing organizations in various areas throughout the country, one has to leave Main Street and go back to the outskirts of town, often to the isolated areas where the raw materials are mined or produced. There one will find that operating a purchasing organization in the territory west of the Rocky Mountains presents a different situation than in the closely-knit industrial areas of the Eastern seaboard and the Middle West.

Despite the many changes brought about by the rapid growth of war industries on the West Coast, the basic problems remain the same. Post-war improvement in transportation, new materials and sources, and new manufacturing facilities will undoubtedly help to alleviate some of the pre-war procurement difficulties. Before delving into the specific details of purchasing operations and technique, I should like to review briefly the status of the various industries on the Pacific Coast and analyze their post-war prospects. In this survey, one cannot help but observe that the success of the newer industries on the coast depends in a large measure upon how well they can serve the pre-war industries in this area.

Pacific Industries

Ever since the first commercial oil well was sunk in Southern California in 1892, the growth of the *petroleum industry* in the West has been a steady one. To supply the material needs of the oil fields and refineries, manufacturers of derricks, pumps, tanks ,and auxiliary equipment were established in the area, although steel pipe and oil well casing still comes from the Eastern mills. Many of the steel fabricators whose peace-time business was built to serve the oil industry used their facilities for military requirements, but are now gradually reconverting back to their former lines. Oil com-

General view of the Kaiser Company's steel plant near Fontana, Cal. The six 185-ton open hearths are in operation 24 hours a day.



pany purchasing departments are well organized, and their Purchasing Agents have long taken an active part in association activities on the West Coast.

The *rubber industry* went West in 1920 and is now firmly established here with the four largest companies operating tire plants, and many independents manufacturing mechanical goods, gaskets, and specialties. With the advent of the synthetic rubber industry, which is operating several large plants on the Coast, and the post-war prospect of resumption of crude rubber imports from the Far East to Pacific Coast ports, the raw material picture is unusually favorable.

Many of the chemicals used in rubber manufacture are still purchased in the eastern section of the country, although there are possibilities of future developments of western sources among the mining areas. Textiles are brought in from the industrial South. The two largest post-war customers of the rubber industry are the automobile field and the construction and petroleum field, where synthetic rubber has great promise in hose and belting. The biggest handicap to the rubber industry at the present time is an acute shortage of labor, which, of course, will be relieved as soon as the military requirements lessen.

The *automobile assembly plants* on the Pacific Coast have all been dismantled and converted to other production. New sites and new plants will have to be provided for post-war production. Plans are already being formulated by the major companies. Of all the sections in the United States, the Far West is most dependent upon the automobile. The large cities are so scattered in area, that mass transportation facilities as we know them in the East, do not exist and on account of the great distances between cities and towns, it would not be economically justifiable to provide them.

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Note: The author is particularly well qualified to discuss this subject due to his long experience in the industrial purchasing field both on the East coast of the United States and for the past three years in the Far West. After graduation from Harvard in 1917 he served as a supply officer in the army in World War I. From 1918 until 1941 he was Purchasing Agent of the Converse Rubber Co., in Massachusetts.

In 1941 he organized the purchasing, traffic, and stores departments of Basic Magnesium, Incorporated, the Defense Plant Corporation project in Las Vegas, Nevada, where the procurement problem was particularly difficult due to the size and speed of the program, location in a non-industrial desert area, and climatic conditions. With the plant completed and operating at capacity, and the critical magnesium shortage alleviated, in 1943 he took over the direction of procurement for the LVT (Water Buffalo) amphibian tractor program as Director of Purchases for Food Machinery Corp., Los Angeles.

This month he returns to the east as Director of Purchases for the Dresser Industries, at Bradford, Pa.

★

Excellent highways are already built and require little maintenance on account of favorable climatic conditions. While in pre-war days, the western motor car assembly plant received practically all of its parts, except tires, from the eastern manufacturers, there are indications that many of the parts will be manufactured here in the future.

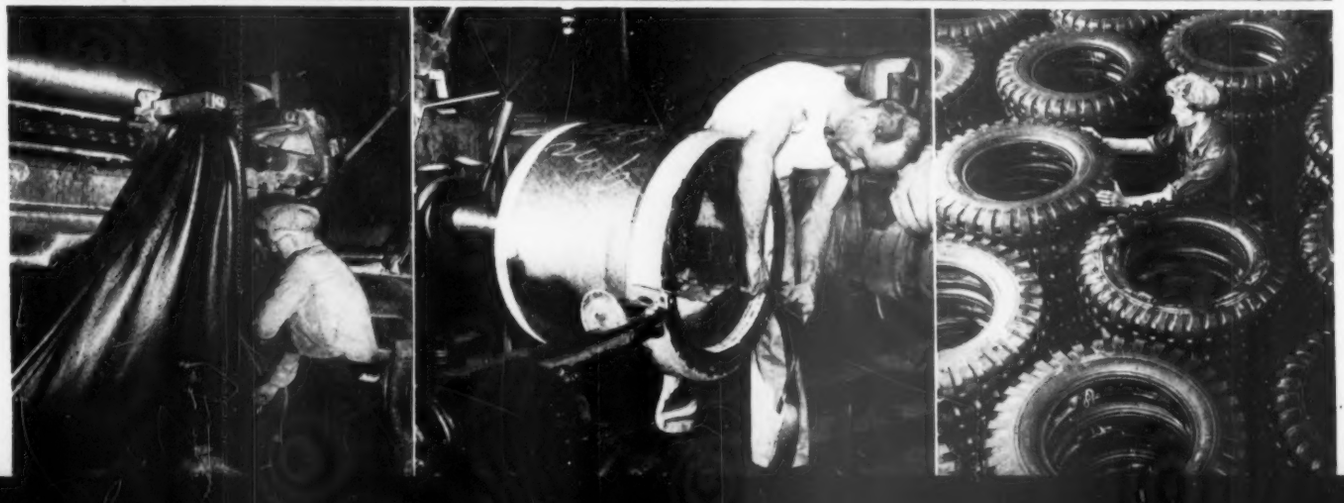
The lumber industry, and its affiliate the pulp, paper, and container industry, is plagued at the present time with a critical man-power shortage which with the extraordinary military demands has created a raw material shortage for the fabricators. This situation must wait the cessation of military demands for relief. But the post-war outlook is excellent. Nowhere in the United States is the housing shortage more acute, and many of the war-time building has been of a temporary nature which must be replaced. There are a limited number of container manufacturers on the Pacific Coast, and prospects for an increase in the production of consumer goods here, plus the demands of the food industry, should provide a steady, expanding market which may call for new facilities.

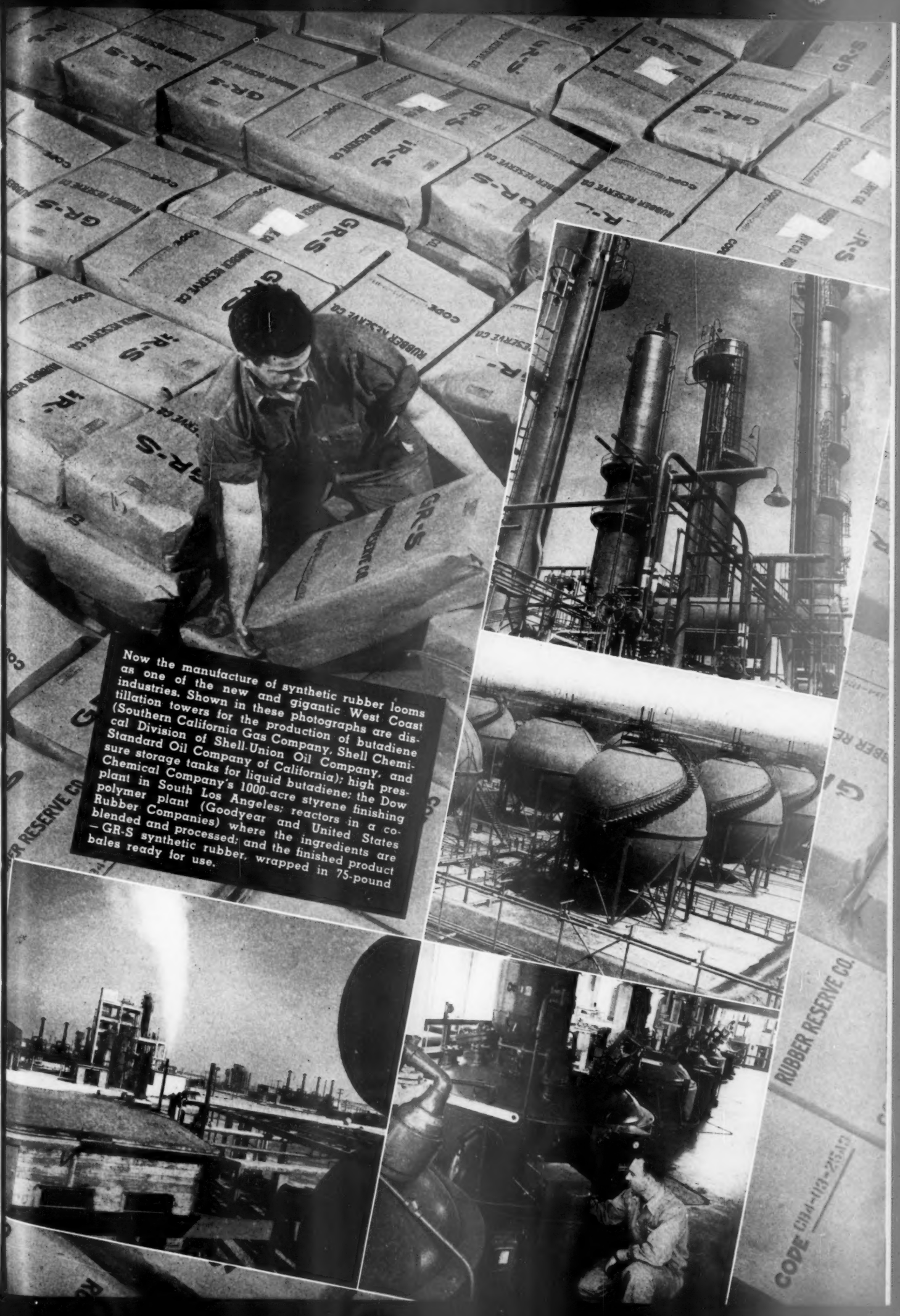
The *mining industry* in the West has long provided a steady market for machinery and supplies to western distributors. The fabrication of metals, however, has long been established in the East, and there is no indication at present of any change in this procedure.

The great increase in supply of two of the newer metals, aluminum and magnesium, presents a post-war problem in which the West is vitally interested. Output of both metals was expanded for the war effort, aluminum primarily for aircraft, and magnesium for incendiary bombs, and to a minor extent for aircraft. Aluminum is well established and is available in sheets, bars, and shapes, as well as castings, for many uses. Its post-war future on the Coast will be dependent upon aircraft and automobile production. Development of peace-time uses for magnesium has been necessarily retarded, and in this respect we are behind Europe. This industry became well established in England in 1935 and made great strides in using the metal for parts of motor trucks, railway cars, and other facilities where lightness of weight was an advantage. No fabrication sources are as yet available here except for castings, which is retarding its use.

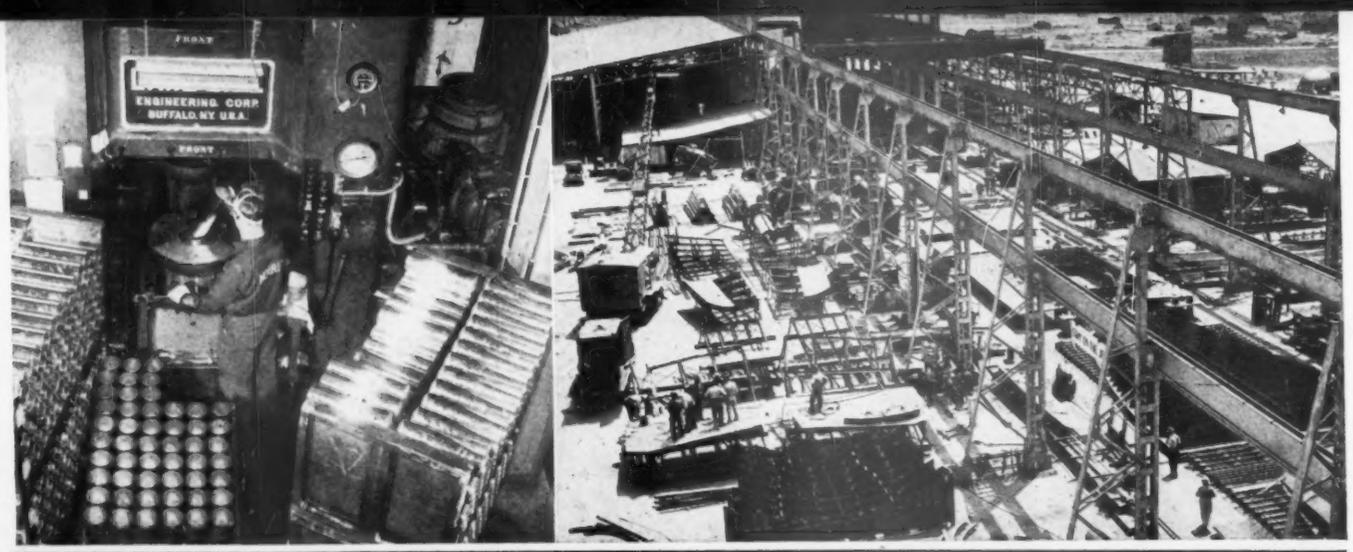
Aircraft and shipbuilding represents the number one post-war problem on the Pacific Coast, for they are now employing the majority of the labor supply in this area, and through their subcontracting of

The rubber industry went west a quarter century ago and is firmly established there, with Los Angeles ranking as the world's second largest rubber center.





Now the manufacture of synthetic rubber looms as one of the new and gigantic West Coast industries. Shown in these photographs are distillation towers for the production of butadiene (Southern California Gas Company, Shell Chemical Division of Shell-Union Oil Company, and Standard Oil Company of California); high pressure storage tanks for liquid butadiene; the Dow Chemical Company's 1000-acre styrene finishing plant in South Los Angeles; reactors in a copolymer plant (Goodyear and United States Rubber Companies) where the ingredients are blended and processed; and the finished product — GR-S synthetic rubber, wrapped in 75-pound bales ready for use.



Excellent facilities for steel fabricating exist on the Pacific Coast. These views were taken at the Norris Stamping & Mfg. Co., and the United Concrete Pipe Co.

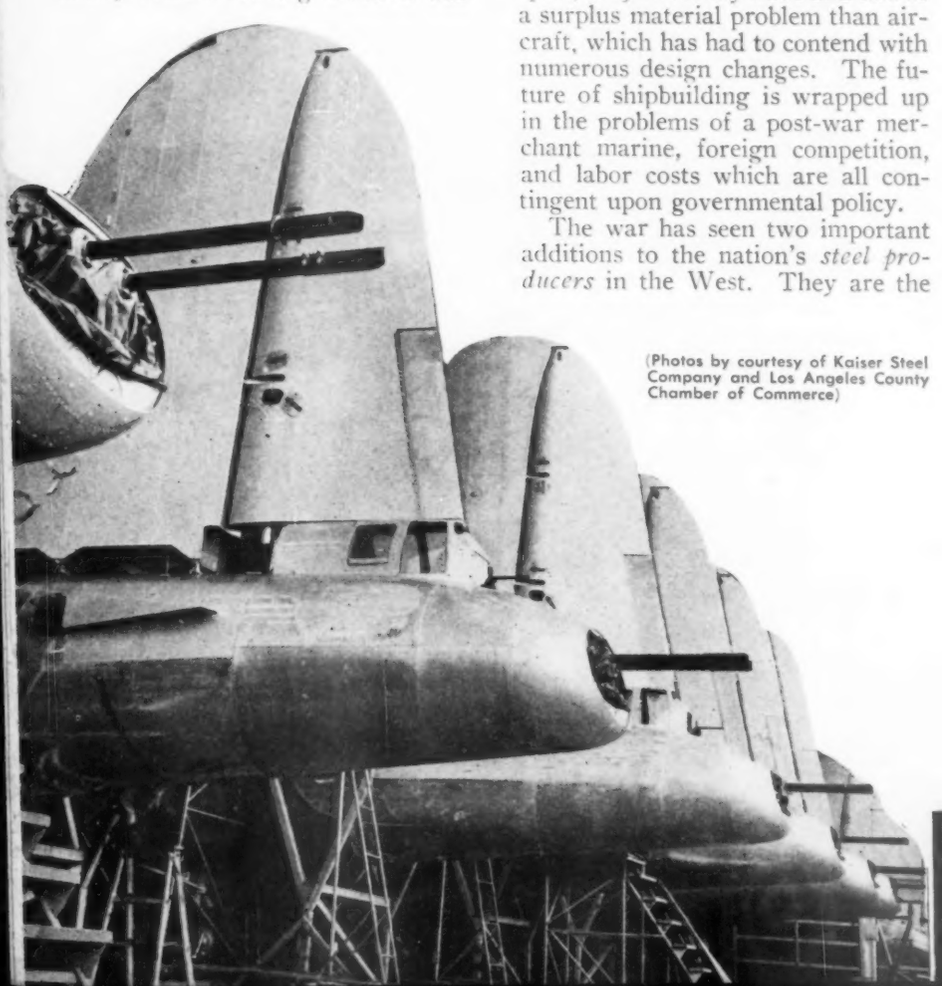
parts, particularly in the case of aircraft, have tied up the facilities of hundreds of smaller concerns, many of whom did not exist prior to the war. Many of these subcontractors have already been cut-back or had their orders cancelled entirely, and cannot get either the man-power authorizations or the materials to go into peace-time production, with the result that a few have gone out of business and it is expected many more will follow.

Much of the sub-assembly work sublet by aircraft does not require elaborate facilities, and outside of factory space and a labor supply, no firmly established organization was necessary. Eventually it is expected that the survivors of these subcontractors, who have good machine tools and competent personnel, will serve the automotive industry and the peace-time set-up of aircraft after the inevitable readjustment.

The materiel departments of the aircraft companies, of which purchasing is one of the functions, have a long and arduous job ahead in the unscrambling of the war-time procurement and the liquidation of contracts and inventories. The shipyards have somewhat of a different problem. In manufacturing larger units, with a longer production cycle, they naturally have had less of a surplus material problem than aircraft, which has had to contend with numerous design changes. The future of shipbuilding is wrapped up in the problems of a post-war merchant marine, foreign competition, and labor costs which are all contingent upon governmental policy.

The war has seen two important additions to the nation's *steel producers* in the West. They are the Kaiser mill at Fontana, California, and the Columbia mill at Provo, Utah. Primarily constructed for the rolling of plate for shipbuilding, they must naturally look to other fields for their post-war market. Price-wise, they will have tougher competition with eastern mills in the post-war era, due to the resumption of transportation by the Panama Canal, with the lower water freight rates.

The peace time needs of the West Coast in steel are many and of great variety. Much of the pre-war business was handled through warehouses in less carload lots. To obtain economical mill runs, some tie-up with warehouses and distributors may be necessary. The automobile industry will provide a large outlet for sheets, and there are other possibilities to which time only can give the answer. The war has seen expansion of steel foundries on the Coast and the addition of several new ones, but there has been little development in forgings. Costs on the whole have been higher than the East, even with freight added, and shortage of labor has been the retarding factor for production. The evolution of the entire steel picture in the West during the post-war period will be followed with keen interest by Western purchasing men.



(Photos by courtesy of Kaiser Steel Company and Los Angeles County Chamber of Commerce)

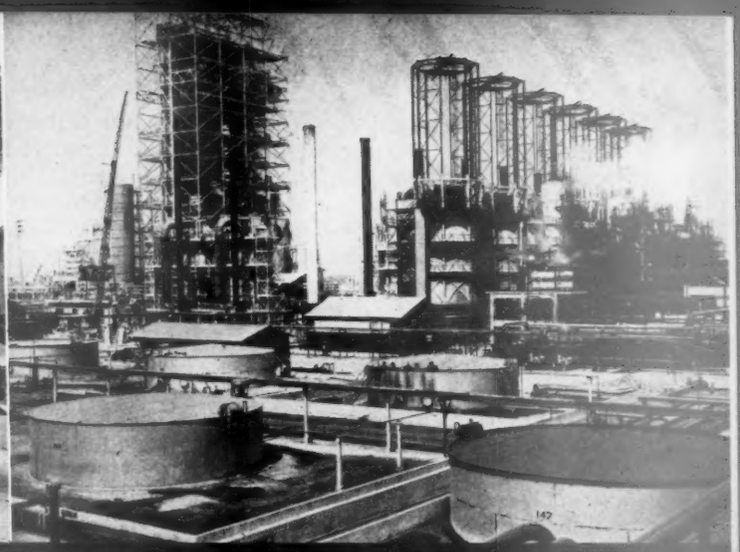
Other Developments

The post-war *agriculture* picture in the West is very bright. The favorable climate for growing several crops a year, new developments in irrigation, food processing equipment, dehydration, deep freezing, and so on, will find one of the West's leading industries moving forward. This industry is one of the most

Mass production of airplanes has been one of the major contributions of the industrial west in the war effort. This scene at Douglas Aircraft is typical of similar efficient production lines to be found along the entire length of our Pacific Coast.

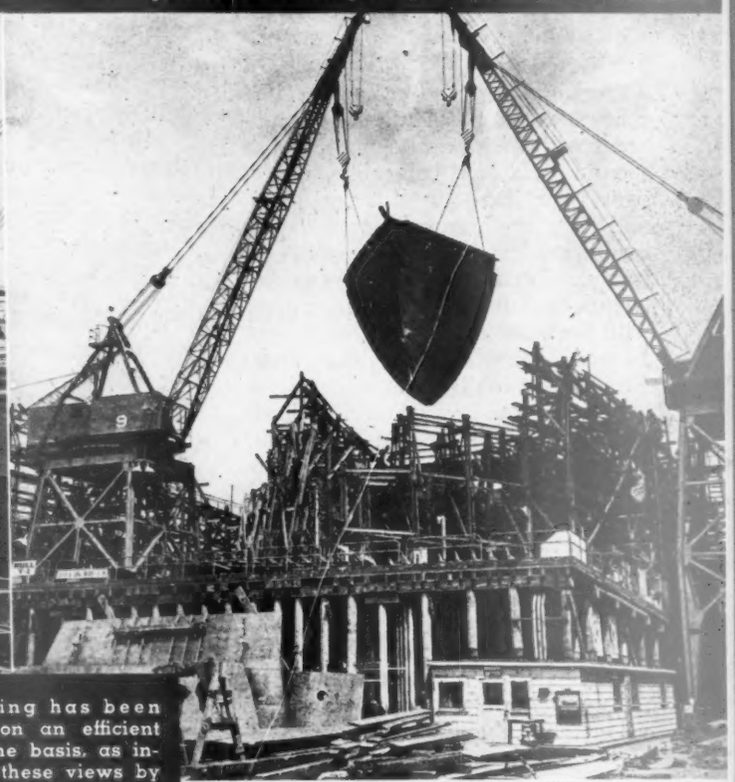


Transportation has been one of the special problems of West Coast industry, but it is being solved with typical western enterprise.



Demands for high-octance gasoline have revolutionized the petroleum industry. Here is the new plant of the Richfield Oil Company.





Shipbuilding has been developed on an efficient assembly-line basis, as indicated by these views by United Concrete Pipe Co., California Shipbuilding Corp., and Consolidated Steel Co.





favorably situated to absorb surplus labor, released by the aircraft and shipbuilding industries, and a back-to-the-land movement of no small proportions is in prospect. Serving this industry, are the farm machinery manufacturers of both the East and the West.

The *public utilities* of the West, furnishing electric power, natural gas, and water to its industries, have provided low costs through the use of natural resources, and post-war will find a steady demand for replacement of existing outlets and expansion of new ones. They, like the oil industry, have long appreciated the advantages of soundly organized central purchasing departments and have contributed two men as presidents of the N.A.P.A.

Pacific Coast *railroads* have had a heavy strain placed on their equipment with the overwhelming load of men and material being transported over their lines for military needs, and their replacement demands for equipment and supplies will be heavy. Traffic and purchasing departments maintain close contact with the railroads in the West, closer I would say than in the East. Freight is a major item in costs out here, even on raw materials which are grown or mined in the West. The answer as to whether the post-war West can produce the materials it needs cheaper than it can buy them in the East will often be found in the cost of transportation. Already the trend is towards more fabrication being done here owing to the higher freight cost on manufactured articles and assemblies than on raw materials. Truck transportation from the East has survived fairly well during the difficult war conditions, and large Diesel truck-trailer units, and the development of Butane-powered units for feeder lines, will continue in post-war.

Distance From Supply

Distance from the source of supply presents a major problem for all Western Purchasing Agents. It necessitates the carrying of larger inventories of supplies, and particularly vital spare parts for machinery. Stand-by facilities are more necessary, and often the decision of whether to buy or make a part must be decided upon the expediency factor rather than that of economy. Development of air-cargo transportation with lower rates after the war may well change this picture to a degree.

Vendor relationships with Purchasing Agents in the West are closely maintained, and in general I would say there is more loyalty, mutual understanding, and cooperation between the buyer and the seller than in the East. There is a reason for this. Distances between customers are so great, and travel so expensive and difficult even in peace times, that the number of salesmen who call and the frequency of their visits is far less. Many Western distributors carry a wide variety of lines of merchandise and equipment, representing Eastern concerns, and keep their customers and prospects well informed in developments in the trade. By the same token, the buyer relies upon them for service, and in cases of emergency does not hesitate to call them to pick up some essential material for him as a favor, even though it may not be in their regular line.

Much of the negotiating and purchasing of smaller items is done by mail and telephone with the distributors in the large cities, so that the general run of salesmen in Eastern cities, who make weekly or even monthly calls are not a comparable problem on the Pacific Coast in consuming interviewing time.

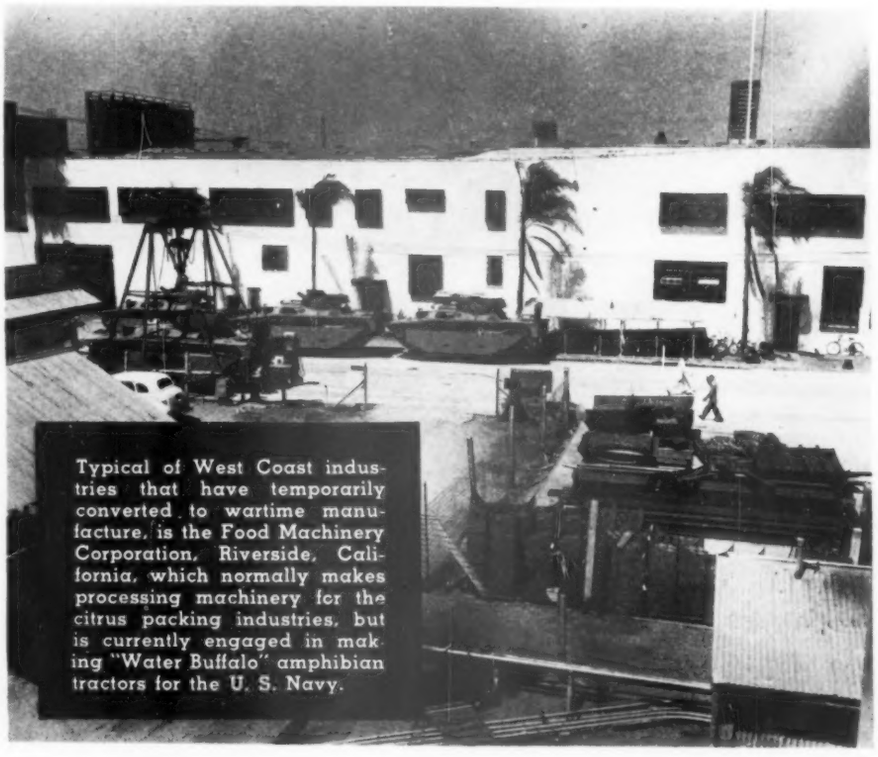
Communications with Eastern suppliers must be carefully watched. Even with offices opening at 8 A. M. on the Pacific Coast, they are three hours behind New York and the Middle West. That means that a purchasing problem which requires an answer or action in the East must be telephone or wired before lunch, otherwise no action can be obtained until the following day. The local offices of the Eastern concerns are of great assistance in these cases as they can present the problem to the proper parties in the East by teletype or night letter and have the answer on your desk at eight the next morning.

Mass Methods Developing

The one outstanding thing to my mind that the war has done for Pacific Coast industry, is to take it out of the class of the job shop, made-to-order technique of operation, and to adopt the mass production, streamlined methods of the East. Labor in the West has not yet become fully acclimated to this type of work, with the infusion of so many workers with no production experience. The result has been high turnover, absenteeism, and lack of efficiency. When the post-war readjustment comes, much improvement will undoubtedly take place.

Basically, the West Coast has many natural advantages for industrialization. The three essentials of life—food, clothing, and shelter—are lower in cost in normal times than in the East. Manufacturing plants can be erected at less cost, of less durable construction. Low electric power costs are available, and petroleum provides cheap fuel for processing, with practically none required for heating.

Continued on page 316



Typical of West Coast industries that have temporarily converted to wartime manufacture, is the Food Machinery Corporation, Riverside, California, which normally makes processing machinery for the citrus packing industries, but is currently engaged in making "Water Buffalo" amphibian tractors for the U. S. Navy.



OL' MAN RIVER

There's a tremendous momentum in business, that can bring us safely through the rapids of the reconstruction period

But business must do some careful steering and the P. A. is a vital member of the crew

By CHARLES FORD

LEAVING the unpredictable Asiatics out of the question, it looks to me as if this war is going to result in a vast international sandwich, with America and Russia two stale, but edible, slices of bread enclosing a lot of very miscellaneous, maggotty and ill-smelling cheese. Something like the shopworn sandwiches they used to fish out of the waiters' aprons when serving Sunday drinks in the waterfront bar rooms.

The cheese is the scrambled nations of Europe.

Common Denominators

We are prone to picture Russia as a hairy red-whiskered ogre intent upon converting the world to communism. It did look that way; but somehow I think the current has been deflected. This war is waking Russia up to the fact that it is a nation—perhaps not yet altogether comfortable in the polite society of nations, but on its way. Its average literacy is on the upgrade, and we have seen what it can do in the way of putting up a scrap. Its constructive ability has marvellously jumped.

We took quite a while to come up the hard way ourselves, starting with an idea and a few people who subscribed to it. The czars left Russia a horde of ignorant peasants, used to having their thinking—such as it was—done for them, and knowing nothing, except the struggle for a bare existence. We started with an idea and no population; Russia started with a great population and no ideas, so they were easy meat for the Bolsheviks. And, agree with them or not, which I don't, the Bolshies were the very active vermin that stung Russia awake.

International Poker

I shouldn't wonder if these two countries, starting from the farthest possible distance apart, wound up at pretty nearly the same place. Russia may be groping towards the initiative of the individual, and we damn' well want to watch our step or we'll be letting George do it too often and too long.

When the big scrap is over and the German and Japanese hides are drying on the fence, the big international poker game will start, everybody looking wise and plastering his cards against his vest buttons. It's a fair probability that one face missing at the table will be that of Uncle Joe Stalin. He's too damned wise to mix into the scrum.

Uncle Joe

He'll have some smart deputies who will call time every so often and ring up Uncle Joe on the telephone. And Uncle Joe will retreat inside the Kremlin, with the Kremlin pulled in after him, smoking his pipe in front of a big map marked out with a red pencil. When his deputy poker players tell him what the rest have to say about Poland and Finland and the Baltic and Germany, he is in a position to growl over the wire: "Go to hellski." If they kick and squeal, they will get another growl: "So whatski?"

Stalin is the smartest guy in the whole bunch, because instead of taking his stand in front of a microphone he is busily saying nothing in his native Circassian, which nobody understands; and nobody can tell what he's thinking about. He's like Ol' Man River—he just keeps rollin' along. He knows the fight will all be out of the others; they'll be hanging on the ropes with the referee on the floor in a dead faint, so he figures they'll just swallow eleven kinds of vitamins and try to look pleasant. And anybody that uses crap-shooting technique is going to lose his wad.

Business Momentum

But Ol' Man River on our side is Business. And he'll just keep rollin' along. The water may run low sometimes, but there will always be enough to wet the catfish. The river may go on a rampage and tear the trees out of the bank for channel snags, but the channel will be there when the water goes down. Business is one thing you can't squelch. It will raise and market the crops and dig the iron and coal out of the mines; and here and there a profit will stick out for somebody to invest in new picks and shovels and tractors. The leaden weight of debt hanging over all of us like smoke in Pittsburgh—debt for the hell we have let loose, debt for the grub the world must eat, debt for the havoc wrought here, there and everywhere —must be liquidated by Business.

Ol' Man River!

Governments aren't going to do the job. The only way government ever did business any good was by letting it alone. Governments may steer, but they mostly interfere; and the hell of it is they mostly interfere in the wrong places.

Profits and Deductions

The big fundamental idea of Business is to make a little money. Here and there arises some genius who thinks of his business as a growing institution, with some special significance on its own account, but he has to make some money to get away with that idea. But how, with debt-carrying charges, and probably handouts by some politicians who want to keep their jobs and swap government jack for votes, with the wild-eyed notions some folks seem to have that the world's burden is on our shoulders, and we are going to save the universe—how anybody is going to get much more than a living is the riddle of today.

Just the other day, somebody called attention to the fact that a man who gets a hundred and fifty thousand simoleons per annum can only pouch about ten per cent of it. Strange as it may seem to the master minds in Washington, there are quite a few guys who are cheap at that figure. Only no one who draws down that much is going to be allowed to keep it; the Treasury will stretch out a long skinny arm and holler, "Gimme".

The Fifth Freedom

There is always the money motive in business, but there is also another motive—pride of accomplishment. Seems to me I'd rather get along with a fair living and watch a live, useful organization grow out of my efforts, than accumulate a wad of jack for the sake of making whoopee with it. One radio commentator, between remarks about gasoline and cheese, said a mouthful: that there is a fifth freedom, that of individual enterprise; and personally I think that's worth more than the other four all glued together. True liberty in a nation consists in permitting every man to do as he damn' well pleases, so long as he doesn't trespass against his neighbor. But who's going to pick the right referee in trespass cases?

The P. A. and the Code

If you will scan the history of businesses so successful that they have really become institutions, you will find that away back in the dusk of an insignificant beginning, some canny old bird with whiskers laid down a policy. Maybe a small policy for a small business, something like the germs biologists let loose in a jar of jelly so that nature can take its course. But that germ may have been somebody with a sense of management or with an uncanny instinct for picking men.

In the coming reconstruction period there should be a very special halo for the boss who can pick himself the right sort of guy for a Purchasing Agent, and then not try to drive from the back seat. I have a hunch that from now on that right guy, with a flair for trading with his kind, sitting in the chair of Purchasing Agent not so constantly as to wear out his pants instead of his shoes, is going to be about the most important individual in the business.

The Fall Guy

The Purchasing Agent has always been the fall guy, and it's time he snapped out of it. When production slips over into the red, or when the sales manager has lost a big order off the hook, it has been the fault of the Purchasing Agent. No more of that, brother!

I have known some big houses in my time, but I have never known one with the inexorable momentum of Ol' Man River unless, back of it all, some half-forgotten old bird with whiskers gave it in the beginning a code of unwritten laws—laws that may be sensed but not put into words; laws that steer the business like a gyro-compass.

Keep To the Channel

Nobody quotes such laws. The new Purchasing Agent who takes hold, if he is right, doesn't have to have them defined for him. They are there, and he senses them and knows they are the channel down which Ol' Man River rolls. Sometimes such houses are called lucky. They are lucky—in their traditional inheritance. They get the breaks because they see them and know how to use them, without straying out of the channel.

Too many sales officers, too many production men, and too many Purchasing Agents are merely chips, floating a while on the surface of the current. Ol' Man River tosses them here and there, and after a while strands them on some mud bank, dirty and dried up. But those who stick and obey the law keep Ol' Man River from drying up when the rains hold off, and keep him within his channel when he wants to go off on a rampage.

Ol' Man River, he keeps rollin' along.

PURCHASING and SELLING in the Reconversion Period



By STUART F. HEINRITZ

In an industrial and economic system subject to cyclic developments which carry us from buyers' market conditions into sellers' markets, and back again, it is foolish to assert categorically that selling policies and methods determine buying practice, or that buying policies determine selling practice. There are some periods in which the former condition prevails, and some periods in which the latter is true. We are just coming through a period when neither statement would be accurate, for governmental regulations have determined and controlled both buying and selling. Through all of these changing conditions, successful buying and selling and good business relationships are matters of adjustment and cooperation.

The preponderant evidence of economic science and business experience points to the conclusion that fundamental economic law is unchanged by any amount of regulation; that the supply-demand ratio determines markets and establishes the conditions upon which both buyers' and sellers' markets exist; and that competition is the great balancing and regulating force.

Buyers' Markets

But even the most conservative of practical economists has learned a lot about applied economics during this period of extraordinary emergency conditions and necessary regulation. Two of these new concepts are of particular interest and importance to the industrial field. We have come to think of distribution in terms of the flow of materials—a function in which both sales and purchasing must play their part. And our definition of buyers' and sellers' markets is no longer expressed exclusively in terms of price and supply, but depends rather on which of the two parties holds that tactical advantage the military strategists call "the initiative".

It is generally conceded that in the coming markets—reconversion and post-war—the initiative will be on the buyers' side. That trend is already clear and it is gaining strength. Even the counter-force of initial scarcity of some finished consumer items has been largely discounted, for the public is inured to waiting and may be expected to be buyers'-market-wise. Most of the factors are already known with a high degree of accuracy—post-war supply, costs, capacity, buying power. The big "IF" in the situation, the factor that will align all the others in the coming market pattern, concerns the character of demand, which is personified by the buyer.

This prospect has been dinned into the ears of Purchasing Agents by the economists, by their own managements, by the leaders of their profession, and by their own experience and good hard common sense. It is highly significant to note that the emphasis, for the most part, has not been directed to the potential advantage and opportunity inherent in such a situation, but to the very definite and serious responsibility which this initiative entails.

As a matter of fact, the prospective buyers' market by no means promises the purchasing man an untroubled bed of roses. Purchasing departments must be reconverted to peace-time practices just as truly as production lines face this necessity. Let's look at a few of the problems that the Purchasing Agent is facing.

A Pincers Movement

1. Post-war purchasing is going to be in the middle of a tremendous economic squeeze play, or pincers movement. Before we reach any kind of industrial balance, there will be a period of extremely active and intense competion as manufacturers seek to regain their pre-war markets, intensified by the efforts of newcomers to enter the field. National social objectives and policies will reinforce the purely commercial competitive factors in tending to lower the prices on consumer products to the end of making more goods available to more people. In the early stages, at least, some measure of ceiling price control will also be retained, on a pre-war base.

On the other side of the equation is the fact that costs are definitely up, anywhere from 15% to 30%, as compared with that base period. In case after case, where management has dusted off the old work sheets on their pre- war product and re-

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figured them to today's costs, the results have been consistently up—up 17%, up 23%, up 28%. A large part of this increase is in labor costs, and will be retained. The supplier is in practically the same position, and no relief can be sought there without driving him out of business and eliminating him as a supplier. The answer must be found in between these two jaws of the pincers, in purchasing and production economies—materials that give more value per dollar, more product from less material, more cuts per tool, more efficient mechanization, more economical quantities, and less expensive transportation. A great many of the production problems get down eventually, to the purchasing department and what it buys.

Bad Habits

2. While purchasing men are justly proud of their record in managing to keep the wheels of production turning under the extraordinarily difficult conditions of wartime procurement, and in maintaining a flow of materials adequate to meet the demands of unprecedented manufacturing schedules, they are not particularly proud of the way this record was accomplished, measured by the standards of purchasing efficiency. Purchasing got into some bad habits, under the stress of wartime necessity, and those habits will have to be corrected in the period ahead.

In war procurement, availability is the first consideration, transcending every other factor. Consequently the Purchasing Agent was necessarily careless about price, so long as he got the goods and didn't run foul of OPA (and the OPA or invoice price doesn't begin to tell the whole story of purchase cost). In this carelessness he was abetted and comforted by the knowledge that Uncle Sam would eventually foot the bill, and that current cost standards included marginal plants drawn into the war program. Neither of these factors carries over into the competitive era that he now faces.

Similarly, the frequent necessity of substitution, and the wide latitude allowed to the purchasing department in this respect tended to make him careless of material standards and of his responsibility for seeking the one most suitable item of purchase. That, too, must be corrected as he returns to the practice of sound purchasing fundamentals.

3. In many cases, the Purchasing Agent will be facing the necessity of dealing with new and unfamiliar materials. Some of these will be the improvements and developments of wartime research, constructively salvaged from our era of wholesale destruction. Some of them will reflect the optimistic predictions of that bright new world in which everything is to be made of plastics, light alloys, or impregnated wood, and every processs carried on by electronic control. A good deal of that talk is fanciful and premature but it can't be laughed off in a purchasing and production program that aims to keep up with the times.

To a considerable extent, this situation may be due to the fact that the buyer's company is entering new fields of endeavor. From casual conversations it would seem that everybody and his brother is going into the manufacture of electrical appliances, plastics, or prefabricated housing after the war, regardless of their previous industrial history and experience. It is growing constantly harder to determine a company's product from its business title. When cereal and soap and rubber companies have played a leading part in munitions production, almost anything can be expected to happen. And that condition prevails among the buyer's suppliers as well as in his own organization.

Hard-Boiled Buying

4. The Purchasing Agent will also have to rebuild the whole structure of his sources of supply. Quite aside from the changes referred to above, vendor lists have been seriously disrupted by wartime conditions. Under priorities mandatory acceptance of orders, and the necessity of getting materials wherever they might be found, there has been a limited opportunity for selectivity and for the practice of loyalty to suppliers, much as the Purchasing Agent may have wished to follow such a policy. Old business friendships are not forgotten, but they may have grown cool, and the record of service and mutual interest may need to be renewed. Fortunate indeed are the buyer and seller who have been able to maintain a satisfactory pre-war relationship through these days, and wise are those who have cultivated those relationships to establish themselves as desirable customers and as reliable sources of supply.

Facing these problems, and finding a solution are bound to have a far-reaching effect upon industrial buying policies and methods in the coming period. It is reasonable to expect that tomorrow's Purchasing Agent will be more hard-boiled in his search for value, but at the same time he will have a keener sense of value, thinking in terms of results per dollar, and not in dollars alone. To the vendor whose product offers superior performance, and therefore true economy, this should be a welcome state of affairs. To all vendors, it points the most logical and efficient sales approach, in selling performance and results rather than merely presenting the products that are the means to such an end.

Wanted: the Facts

It is probable, also, that tomorrow's Purchasing Agent will be more skeptical—skeptical in his appraisal of claims and promises, and skeptical of the materials and methods currently in use. At the same time he will be actively on the lookout for better materials and better methods. If he has the right conception of his job, he will be the most aggressive factor in the entire company organization in testing the possibilities of change and promoting the use of new materials and devices that promise better performance. No one is more conservative than the shop man who is accustomed to working with a certain product and confident of the results he will obtain from its use. More and more, the Purchasing Agent must turn salesman within his own company, suggesting, recommending, and persuading the trial and use of pertinent new materials and methods that hold the promise of advantageous application.

What the Purchasing Agent wants in a sales presentation, therefore, may be briefly summarized as follows. These principles have always been a sound approach to a mutually satisfactory and profitable buyer-seller relationship, but they are highlighted by the present situation.

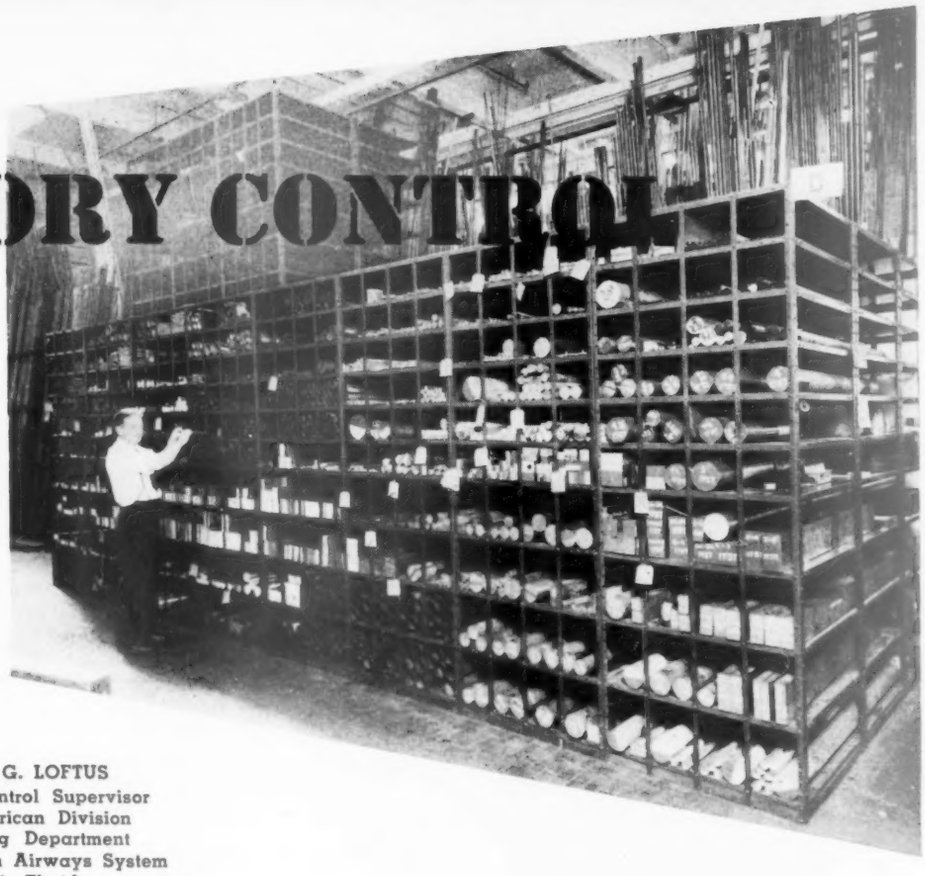
He wants factual information, not generalization nor psychological appeal.

He wants information on what the product will do. Technical data is important to the buyer only as it is interpreted in results.

He wants information on what the product will do for his particular company. He recognizes that a good salesman is probably his best possible source of information about a product, and his chief criticism of the sales fraternity is that they are too little concerned with the specific application or end-use which is the buyer's basic problem.

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INVENTORY CONTROL



The three basic factors —rate of use, minimum reserve stock, and time needed to secure deliveries—are fitted into a simple and effective control formula

By W. G. LOFTUS
Materiel Control Supervisor
Latin American Division
Purchasing Department
Pan American Airways System
Miami, Florida
A. S. Galbraith, Division Purchasing Agent

ONE of the primary factors affecting the operating success of an Air Line, or any other large volume business, is the efficiency of the supply organization in maintaining an adequate inventory of specific material, parts and supplies at definite usage locations, without incurring an excessive investment in such inventory stocks. The prime requisite of an efficient supply operation is to maintain and control inventory in proportion to the specific requirements at definite locations.

The problem in inventory stock control is to devise a systematic control method which will show the frequency of use, the working quantity required, the general trend, and also identify fluctuations in specific categories of inventory. Each of these features is important. Abnormal increases or decreases must be reflected and discovered before they become critical and affect the efficiency of the operation concerned.

To function efficiently, the guiding factors must be known, discovered, or pre-determined. Regardless of the reliability of the determining factors, they must not be accepted as standard and used continuously to establish a permanent basis for controlling inventory stocks. A flexible formula for computing the factors, which can be revised to follow changes and use trends, must be used.

The efficiency of inventory material control depends entirely upon the manner and method of securing and compiling the records and reports that reflect inventory transactions. They should be timely in order to effect corrective measures as soon as possible when abnormal fluctuations occur. The degree of control efficiency is in direct ratio to the promptness with which the required reports are received from the reporting sources and recorded.

The method used to classify and identify inventory stock is of vital importance, and is the key to efficient control. Business firms handling a large volume of inventory in scattered locations cannot exercise control without a uniform identification or catalog system. Both the accounting department, responsible for monetary accountability, and the supply organization, responsible for physical accountability, are unable to reconcile or check their records of inventory transactions throughout the company operation without a uniform identification system used at all locations to check items in and out of inventory stock.

Need for Control

The methods used by different firms to decide what constitutes maintenance of a normal ratio of monthly inventory to monthly withdrawals may differ with each type of business operation. The prime purpose of establishing a normal ratio of inventory to issues is to accomplish the highest operation efficiency with the lowest practical working inventory. When the normal ratio is found and approved, the problem becomes mathematical.

The objective of controlling inventory turnover can not be attained with any substantial degree of efficiency unless the time interval between placing an order and receiving delivery can be adjusted and controled. In normal times this can be accomplished by arranging for deliveries as wanted, and the vendor can meet delivery dates specified by the buyer. Under present day conditions, this works in reverse. The buyer must maintain an inventory in conformity with delivery dates promised by the vendor. This is accomplished by ordering in quantities and at intervals dictated by the time required for completing a delivery.

This handicap to inventory turnover efficiency places a major responsibility upon the supply organization. The only competent way to handle it is through an inventory control system which uses all of the involved factors. Control forms upon which the desired information is collected, and the routing of these forms, are important. An inventory control plan, together with the

forms, pertinent data, and procedure to make the plan function for a commercial air line, is outlined herewith.

The net results and advantages produced by an efficient method for controlling inventory stocks may be summarized as follows:

1. Minimum investment in inventory.
2. Minimum storage space required.
3. Maximum inventory turnover.
4. Ability to adjust inventory in advance of known or anticipated increase or decrease in stock requirements.
5. Transfer to other locations or conversion of surplus or obsolete stock into dollar assets.
6. Ability to secure quantity discounts from vendors.
7. Elimination of excess cost of telegraphic orders.
8. Elimination of excess delivery cost of air and railway express emergency shipments.
9. Reduced labor cost of counting excess physical inventory.
10. Reduced cost of inventory depreciation.
11. Assurance of capacity operation of equipment on schedule.
12. Possibility of group category purchasing of inventory replacements.
13. Identification and location of surplus and obsolete inventory.
14. Reduction of inventory by transfer or disposition of surplus and obsolete parts.
15. Revision of minimums and stock quantities to meet current requirements.
16. Orderly systematic method of controlling inventory replacements efficiently.
17. An inventory ratio in direct proportion to quantities issued and vendors' delivery performance.

Stock Records

Supply personnel can not rightfully be expected to discharge this major responsibility efficiently unless they have the proper tools with which to do the work. One of the most important tools is the stock record system. To a great extent, the success or failure of operating schedules depends upon the efficiency of this one tool and how expertly it is used by stockroom personnel.

The logical control tool for gauging inventory stock replacement is an accurate and efficient stock record of previous inventory transactions—receipts and issues. Stock record systems which compel operating personnel to perform a series of mental gymnastics in order to decipher, translate, and take off the information necessary to determine the proper time to place the order, and the correct amounts of inventory replacements to order, are directly responsible for failures in inventory maintenance when they occur. Record systems of this type should be replaced to eliminate this handicap to supply department efficiency.

Equally important is the method used to file the unit stock record cards. Modern systems are designed to eliminate errors in filing and to protect the records from loss by preventing easy removal. This desirable feature keeps the stock record of each individual inventory item readily accessible in alphabetical or numerical sequence. A filing system of this type is highly recommended to eliminate the inefficiency and errors which result from a loose or floating type of record.

A Comprehensive Form

The unit stock record card shown herewith has all the features conducive to efficient material control of inventory items handled in every stockroom. It has been designed for use in conjunction with the inventory control procedure and replacement formulae described.

This stock record card is designed for use in an open top file. It can be adapted for use in a visible type filing system by placing the heading at the bottom of the card. It contains the following information:

1. The numbers 1 through 16 in the top line are key numbers assigned to identify major sources of supply and to facilitate group ordering. For example, No. 1 indicates that the item is purchased from Douglas, No. 2 from Pratt & Whitney, No. 3 from Wright, etc. Thus when only one or two small items that are bought from a single vendor reach the *Ordering Point*, additional items indicated by the blue tab (signifying *Near the Ordering Point*) can be added to the order so as to arrive at an economical quantity shipment and to avoid the necessity of issuing another order on the same vendor shortly thereafter. Group ordering of items in related classifications is also handled in the same manner.

2. The four top line signal boxes are self explanatory. They are for visual signal tabs of the color indicated, and provide a quick reminder, by color and position in the file, that the stock of this item: (green) has reached the ordering point; (blue) is approaching the ordering point; (orange) is to be calculated on a changed rate of use; or (red) is actually at or below the prescribed minimum quantity.

3. The catalog number, identifying the inventory item and used as the basis for filing arrangement, is located in the upper right hand corner.

4. The exact location of the item in the stockroom is recorded in the four spaces headed: Stockroom—Row—Bin—Shelf.

5. The two-year space boxes, January through December, are for posting the actual total number of units issued in each month.

6. The five boxes to the right of monthly total issues, are for the control figures and the guidance of posting and order clerks. They show: Minimum Inventory Quantity, Average Monthly Use, Delivery Time Required, Order Point, and Order Quantity.

7. The Key Word, Vendor, and Vendor's Part Number spaces, and the supplementary information included under each of these blocks, are self-explanatory.

8. The left-hand lower side of the card, under the heading "Purchase Record", is for recording inventory replacement information (requisitions and purchase orders). If the ordering formula is used, this space ruled for eight entries will cover a period of two years. The fourth column in this section, recording the vendor's promise of delivery, is for posting follow-up information.

9. The two columns headed "Inventory Transactions", at the center and right-hand side of the lower section of the card, are for recording issues from and credits to inventory stocks. This heading is carried over in three full columns on the back of the card, providing total space for recording 49 transactions. When more space is required, a new card is installed and the old one removed to a reference or dead file. Two of the column headings in this section should be explained as follows:

Reference is for entering the identifying number of the stores issue, cash sale, shipping, order, stores credit, purchase order, or other identifying number of shipments received from a vendor.

Balance is for recording the quantity remaining in inventory *after* the units in the particular transaction have been issued or received.

10. The notation of "Stock Loca-

DETERMINING ORDER POINT AND ORDER QUANTITY

"CAUSE AND EFFECT" TABLE

Monthly Rate of Use - 10 units
Minimum - 8 units
Delivery Time - Various

This detailed table further explains the results which can be expected by using the Mathematical Control Formulae. Circled figures are ordering quantities at the ordering points directly above each circled figure.

Del. Time	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1 Month	28 10 18 (30)	18 10 8 30 38	38 10 28	28 10 18 (30)	18 10 8 30 38	38 10 28	28 10 18 (30)	18 10 8 30 38	38 10 28	28 10 18 (30)	18 10 8 30 38	38 10 28
Ordering Quantity - 3 Months Supply. Order Point - 1 Month Supply Plus Minimum												
2 Months	38 10 28 (30)	28 10 18	18 10 8 30 38	38 10 28 (30)	28 10 18	18 10 8 30 38	38 10 28 (30)	28 10 18	18 10 8 30 38	38 10 28 (30)	28 10 18	18 10 8 30 38
Ordering Quantity - 3 Months Supply. Order Point - 2 Months Supply Plus Minimum												
3 Months	48 10 38 (40)	38 10 28	28 10 18	18 10 8 40 48	48 10 38 (40)	38 10 28	28 10 18	18 10 8 40 48	48 10 38 (40)	38 10 28	28 10 18	18 10 8 40 48
Ordering Quantity - 4 Months Supply. Order Point - 3 Months Supply Plus Minimum												
4 Months	58 10 48 (50)	48 10 38	38 10 28	28 10 18	18 10 8 50 58	58 10 48 (50)	48 10 38	38 10 28	28 10 18	18 10 8 50 58	58 10 48 (50)	48 10 38
Ordering Quantity - 5 Months Supply. Order Point - 4 Months Supply Plus Minimum												
5 Monts	68 10 58 (60)	58 10 48	48 10 38	38 10 28	28 10 18	18 10 8 60 68	68 10 58 (60)	58 10 48	48 10 38	38 10 28	28 10 18	18 10 8 60 68
Ordering Quantity - 6 Months Supply. Order Point - 5 Months Supply Plus Minimum												
6 Months	78 10 68 (70)	68 10 58	58 10 48	48 10 38	38 10 28	28 10 18	18 10 8 70 78	78 10 68 (70)	68 10 58	58 10 48	48 10 38	38 10 28
Ordering Quantity - 7 Months Supply. Order Point - 6 Months Supply Plus Minimum												

tion" on the bottom line of the card shows the specific point of use, where inventory is maintained. A comparison of the record for various inventory points handling the same item facilitates the transfer of materials in case of emergency.

Inventory Terms Defined

A. *Ordering Point*: The amount of inventory stock on hand when an order must be placed so as to secure delivery from the vendor *when or before the minimum is reached*. The ordering point is predetermined by multiplying the average number of units issued monthly by the number of months required by the vendor to make delivery, and adding the minimum.

B. *Ordering Quantity:* The amount of stock which must be ordered to protect the minimum and to cover withdrawals between the time of ordering and securing delivery from a vendor. The exception is when the ordering quantity, so calculated, is within 10% less than the vendor's standard package. In that case, if it is more economical from a cost and handling standpoint to order the standard package quantity, the latter is substituted.

C. *Minimum*: The quantity authorized by a qualified supervisor, who uses the item, as the least amount of units required to be retained in inventory, perpetually, as a reserve for emergency use. The most efficient way to establish a minimum is to set it as the equivalent of the average number of units used in one month or the greatest number of units withdrawn at one time, whichever is the larger. It is important that the term "Minimum" as used in this system should not be confused with the "Ordering Point".

D. *Standard Package*: The number of units customarily packed by vendors in one carton, box, or other container. Frequently, additional discounts apply when standard packages are ordered instead of irregular amounts, and handling is simplified.

E. *Inventory*: The word used to identify all material which is used repeatedly, purchased in advance of use, and issued from storage stockrooms when and as required.

The Mathematical Formulae

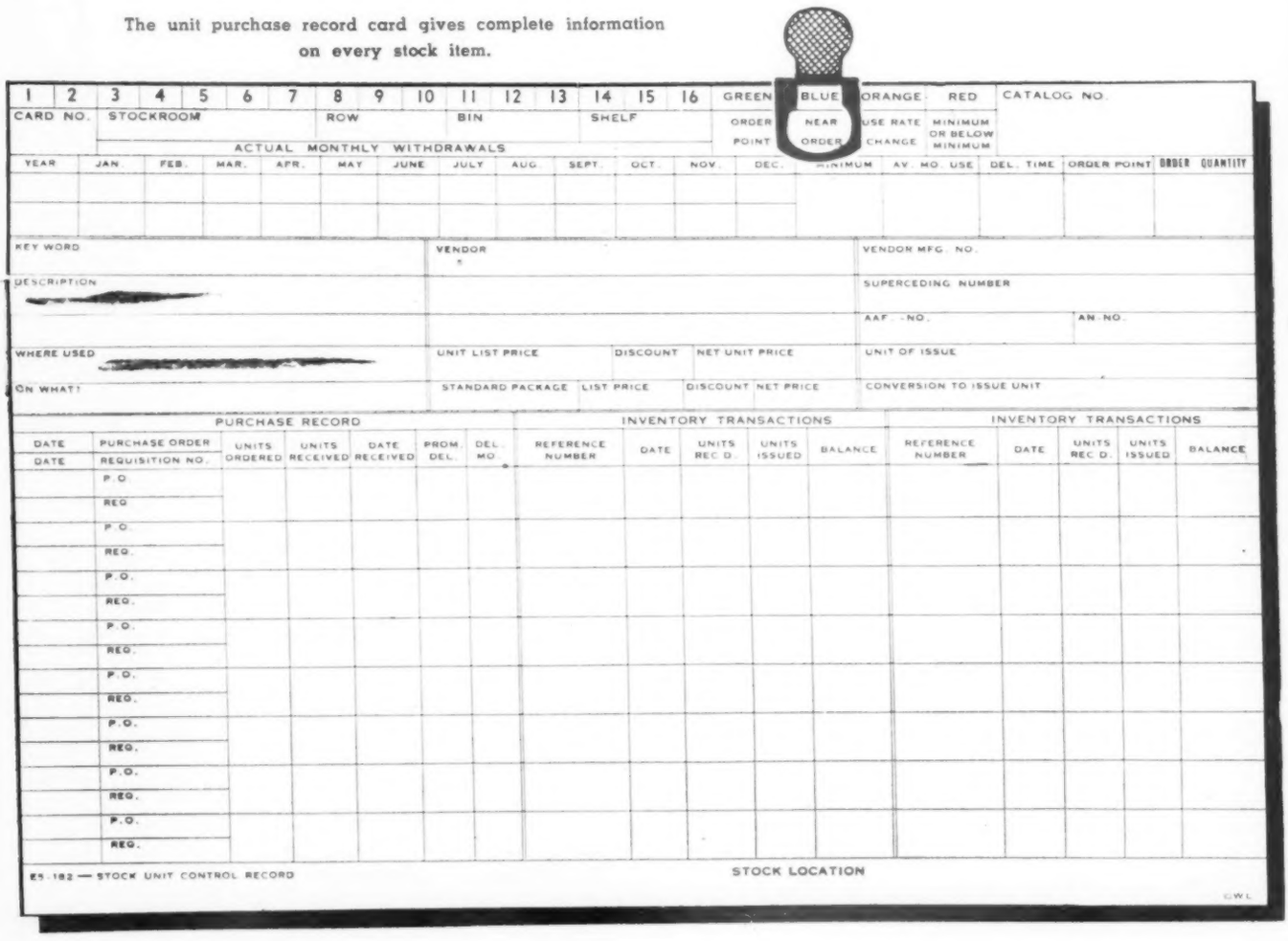
Guesswork and haphazard ordering of inventory replacement stock can be entirely eliminated by analyzing and using the record of past performance—the movement of items into and out of inventory. A simple formula can be evolved from this information, governed entirely by the three prime factors:

1. The established minimum.
2. Average monthly rate of use.
3. Length of time required to secure delivery from vendor.

These three control factors can easily be determined by checking information on current purchase record cards, and they are incorporated in the heading of the unit control card used in this system.

In working out this formula, we take as an example of inventory item an aircraft bolt, ½" x 3". The minimum is 8 units. The average monthly rate of use is 10 units. The delivery time from vendor is 3 months. Reference should also be made to the detailed "Cause and Effect" chart shown herewith, in which the same values are used for minimum and average rate of use, but variable delivery times are tabulated, ranging from 1 to 6 months, to illustrate the varying conditions that the supply organization must consider in setting up its procurement program.

The unit purchase record card gives complete information on every stock item.



The purchase record is the source of data for inventory analysis and surplus disposal.



The object of the formula is to determine when the order should be placed for replenishment of inventory, and what quantity should be ordered. It should be noted that while this formula is generally applicable on delivery schedules of three months or longer, there will be cases in which delivery can be secured in one or two months, and where, from an all-round economy standpoint, it is desirable to make purchases not more often than four times per year. This is clearly shown in the "Cause and Effect" table, and such cases are treated as exceptions in this system.

The Ordering Point is determined as the monthly rate of use times the number of months required for delivery from a vendor, plus the minimum.

$$(10\times3)+8=38$$

The Ordering Quantity is determined as the number of months required to secure delivery from a vendor, plus one, multiplied by the average monthly rate of use.

$$(3+1)\times10=40$$

Thus when the balance on hand in inventory is reduced by withdrawals to 38 units (the ordering point), then 40 units (the ordering quantity) must be ordered at once to secure delivery before average withdrawals will reduce the stock to the minimum.

If, through an oversight or because of an abnormal and unforeseen demand, the item is not ordered until the balance on hand is reduced to an amount below the ordering point, the difference between the actual balance on hand and the pre-determined ordering point must be added to the amount being ordered. This procedure corrects the error of not ordering promptly when the balance on hand reached the ordering point. Thus, if the order is not placed until the balance on hand reaches 35 instead of 38, three extra units must be added to the replenishment order to cover the error.

$$(3+1)10+3=43$$

If the item is not ordered until the difference between the balance on hand and the ordering point is greater than the minimum, this normal correction will not be adequate to meet the situation and maintain the necessary inventory stock. In this case it becomes necessary to handle the difference in amounts as a special requirement, to be ordered separately, by telegraph, and to be shipped by air express or other means to insure immediate delivery. Otherwise, the stock on hand will be exhausted before the regular 3-month shipment arrives. Thus if the balance on hand is reduced to 26 units before the order is placed, or 12 units less than the ordering point, as compared with a minimum of 8, the following order procedure is indicated:

Regular order:

$$(3+1)\times10=40 \text{ units}$$

Wire order, air express delivery: 12 units.

Exceptional Factors

The delivery time factor used in computing the ordering point and quantity should be the number of months required to secure delivery on the last previous order placed with a vendor, unless there is definite information to the contrary.

When the stock record card indicates that the time required for delivery is a fraction of a month, the next highest whole figure is used in computing the ordering point. Thus, ½ month becomes 1 month in the formula, 2¼ months become 3 months, etc.

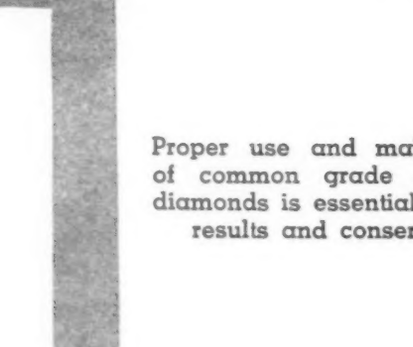
The mathematical formula does not apply when the minimum is 1 unit and stock is not replaced until after the item is issued.

The mathematical formula does not apply to inventory items which are issued infrequently and in quantities greater than a monthly average. This particularly applies to

Continued on page 298

Longer Life for INDUSTRIAL DIAMONDS

Proper use and maintenance of common grade industrial diamonds is essential for good results and conservation



An interview with
SHELDON BOOTH President, Diamond Tool Company

Industrial diamonds, particularly for the dressing of grinding wheels, are generally recognized as vitally important to the maintenance of our war production in every segment of mechanical industry. Recent emphasis on the necessity for conservation of the available supply of industrial diamonds has focussed attention on the importance of careful selective buying of these diamonds for specific uses. Equally important is the type of setting in which the diamond is mounted and the nature of the tool in which it is to be used. Likewise, there is today greatly increased interest in determining the best methods of wheel dressing with diamond tools in order to prolong the life of the diamond.

Industrial diamonds are customarily merchandised in three grades —Common, Medium, and Select. Medium and Select quality stones are always scarcer than the Common quality, and they are proportionately two to four times more expensive. It is in these higher grades, which are sometimes essential for specific purposes, that the greatest shortage exists.

The basis of grading is generally as follows:

Common quality: One big diamond, rough, all diamond, no special shape or special density guaranteed.

Medium quality: Diamonds which possess either special shapes for special purposes, or special grain density without the special shape, but not both.

Select quality: Stones which are both of the special density and special select shapes.

In purchasing industrial diamonds, it should be borne in mind that it is the crystal which does the cutting, and not the contour of the stones. Many buyers are inclined to specify Medium and Select quality stones in the belief that they are securing diamonds with much longer life, that they can use a smaller size for a given purpose, and that consequently they are getting more value for their money. As a matter of fact, in the majority of cases, it is sounder economy to use Common quality diamonds, which will do fully as good a job, and last longer, if they are bought in the proper sizes in proportion to the grinding wheels to be dressed, are wisely used, and are re-set at frequent intervals. This matter of frequent re-setting is extremely important, for it will do more than anything else to prolong the life of the diamond.

Such a buying policy is recommended as tending to insure prudent utilization of the available supply of Common quality diamonds and definitely conserving the diminishing supply of the scarcer, more expensive grades. An outstanding consideration in purchasing diamonds of a lower grade, for straight dressing purposes, is that the lower grade diamonds must be bought in larger sizes because the crystals are not so closely knit. There is still a considerable leeway in cost as compared with the much higher prices of Medium and Select grades, even in the smaller sizes of the latter.

There are a number of factors to be considered in seeking the fullest possible utilization of each Common quality diamond. There must be a balanced relationship between the hardness of the wheel and the hardness of the diamond. Too hard a wheel will destroy the diamond; too soft a wheel has a tendency to make it round. In many cases, economical procedure will dictate the use of slightly harder grinding wheels.

Insistence of buyers on extreme points in the diamonds has made heavy inroads on the higher grades, and in actual use such extreme points eventually become rounded in any case unless the best dressing procedure is followed. In most instances, the same advantages can be obtained with Common quality stones by applying the diamond to the wheel at a 12 degree down angle and rotating the nib at intervals. In this way the diamond sharpens itself while being used, there is a smaller contact area between the wheel and the diamond, cutting efficiency is maintained, and wear on the diamond is reduced. Life of the diamond can subsequently be renewed many times by re-setting at proper intervals, usually every two or three months under ordinary conditions of use.

There are two positions of grain structure in which a diamond can be mounted, and each has a distinctly different effect on the cutting power of the diamond. For example, if the stub ends of the crystal are applied to the wheel in not too large a contacting area, the diamond will overcome the wheel resistance and the ends of these crystals will shave the wheel. This would be a successful dressing operation.

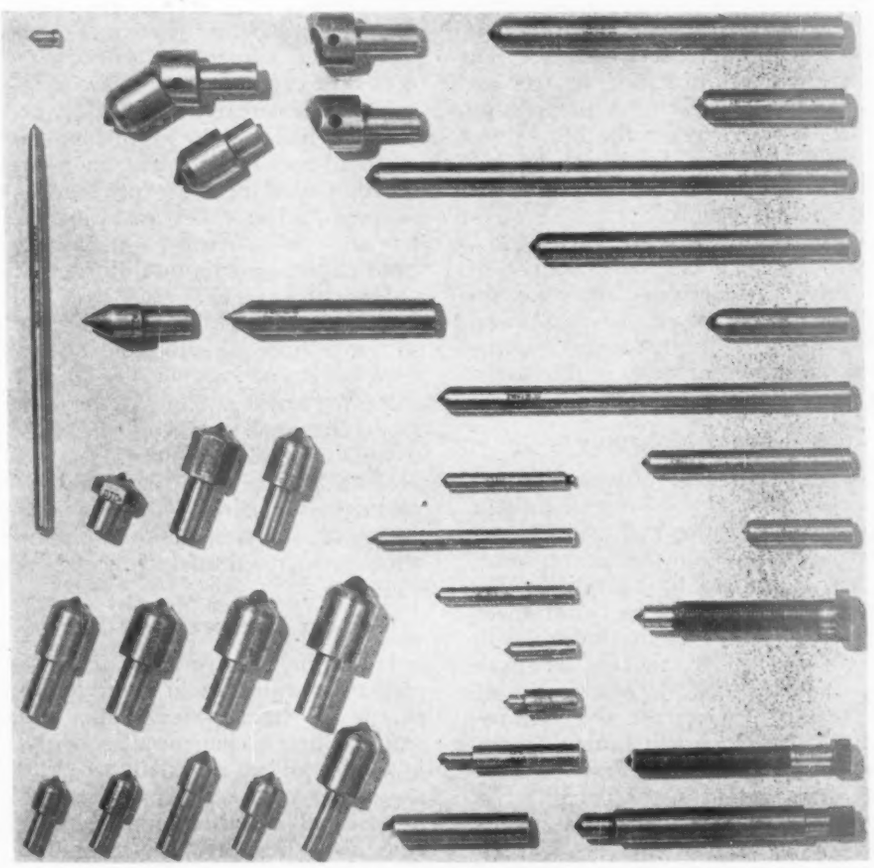
On the other hand, if the grain structure is not properly placed in the mounting, it will not cut even though it may be a good diamond and have great cutting power. It is readily seen, therefore, that experience and specialized skill are required in diamond setting and resetting. A diamond which will not cut properly when received is not necessarily defective, but it should be immediately returned for re-setting.

In line with this advocacy of wider use of Common quality diamonds and their frequent re-setting for a longer life, the method of setting is important. It should be tender to the diamond. In one effective system, avoiding the hydraulic extreme pressure sometimes used in the setting process, a hand die-casting process is used, putting a gentle pressure of 15 to 20 pounds on the metal to hold the diamond into the setting during the cooling process. This method, while providing an absolutely firm setting for the stone, eliminates all tendency to increase or develop a possible indicated fracture in the diamond. To the contrary, it holds the diamond together with a gentle, non-crushing pressure.

In this patented process, a silver alloy having a melting point of 1400° Fahrenheit is used as the holding metal in which the diamond is inserted. A tight bond between the diamond and the holding metal is secured by impressing a die with correct size hole upon the surplus metal raised above the diamond during the setting process. Thus, while in a putty consistency, the metal inside the steel shell, with the diamond centered, is pressed down into the lock keys and so held during the cooling process for a matter of a minute or two. These lock keys or ears are cut into the setting shell to dissipate the heat which is generated by the diamond in use against the emery wheel. They allow the heat to travel from the diamond rapidly into the outside steel shell, thus protecting the immediate metal (with its lower melting point) in which the diamond is molded and held inside the steel shell. A metal with higher melting point could be used to hold the diamond, but that would automatically create added inconvenience in the re-setting process.

The key which unlocks the diamond from its setting for re-positioning in the re-setting process is a 1400° Fahrenheit flame, which does not melt the steel jacket, but enables the operator to re-position the stone with a new front of resistance, and repeat the die-casting operation. Thus the diamond is restored to a new life of service, lessened only by the amount worn off by previous use. This method avoids all chipping, all breaking by hammering, cutting or violence, and the use of extreme heat — factors that are liable to cause serious damage to the stone when attempts are made to remove diamonds from so-called permanent settings. The lock key ears dissipate the dressing heat, enabling the holding metal, with its 1400° melting point, to withstand abuse within all practical limits of any dressing operation.

Wider familiarity with the possibilities of Common quality diamonds in this type of setting, and their proper use with frequent resetting to compensate for wear, will result in general agreement that they provide the most economical, practical, general run of dressing tools which can be obtained. And any general acceptance of this principle should result in substantial conservation of the national supply of industrial diamonds — a very real contribution to the war production effort.



A variety of diamond tipped tools for standard and special purposes.

PATENT LAW FOR PURCHASERS



The buyer must beware of infringing on legal rights of others in respect to patented products, and must protect his company against such liabilities

By LEO T. PARKER

FREQUENTLY, purchasers have definite occasion to know, at least elementary principles of protective laws relating to patents. This is so because purchasers may be held liable in damage for failure to conform with certain well established laws protective laws with respect to purchased merchandise and equipment.

For example, in the leading case of Heaton Company v. Eureka Company, 46 U. S. 161, the Supreme Court of the United States, said:

"If he (patentee) sees fit, he may reserve to himself the exclusive use of his invention or discovery. If he will neither use his device nor permit others to use it, he has but suppressed his own. A suppression can endure but for the life of the patent, and the disclosure he has made will enable all to enjoy the fruit of his genius."

In other words, the owner of a patent may, if he desires, refuse to manufacture, sell or license his invention. Moreover, all those who make, sell or use a patented invention, without authority of the patentee, are liable as infringers.

Legal Monopoly

A United States patent is a monopoly created by law. Plainly a patent is a written contract between an inventor and the government. The "consideration" given on the part of the inventor to Government is his disclosure of the invention in plain and understandable language so that any person, who is skilled in the art to which the invention relates, may make and benefit by the invention after the expiration of the 17 years period of the patent.

Numerous litigations have resulted simply because few persons realize that an unauthorized person who makes a patented invention, although for his own use, is liable as an infringer. Numerous higher courts have upheld this law.

In another case the Supreme Court of the United States held that a person who purchases and resells a patented device, without authority of the patentee is liable as an infringer.

In the leading case of General v. Sutter, 186 F. 637, a higher court explained the acts consisting of contributory infringement, as follows:

"The legal principles governing contributory infringement exists where one *knowingly concerts or acts* with another in an unlawful invasion of a patentee's rights. If assistance is given by furnishing an essential part of an infringing combination and the part furnished is adapted to no other than *an infringing use*, such contribution makes him a contributory infringer."

In another leading case, (80 F. 712), a purchaser was held liable as an infringer because he advertised and sold *only one part* of a pantented article, although the *claims* of the patent were *not* infringed by the selling of this one part. He was held liable because in the advertisements he explained *how the part could be used* with other parts which comprised an infringing device.

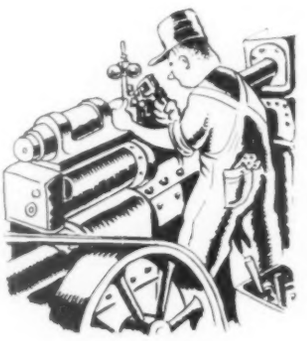
Whom Patentee May Sue

It is important to know that the owner of a valid patent is privileged to sue for infringement either the manufacturer, seller, or user of the invention, or all of them, whereby the owner of the patent is enabled to forestall extensive infringement with little difficulty. However, the owner of an infringed patent *may* sue *only* the maker, and, after infringement is established in the courts, he may obtain an injunction to prevent the continuation of the infringement by other parties. Obviously, all parties are liable in damages to the patentee.

The same rule of law is applicable to repairs made to a machine, merchandise, or equipment. In other words, any one may sell or purchase ordinary parts for repairs on a patented machine or device, but both are liable for infringement if a worn out machine is practically reconstructed.

A recent United States Court in Harrison v. St. Louis, 77 F. 740, explained the law on this subject concisely and clearly, as follows:

"The rule is established that a person . . . . . has the right to repair a part of the machine or device provided that the part so replaced is not separately covered by a patent



. . . . . .The fact that the device is patented does not lessen the owner's right to put it in order when it gets out of repair, unless considered as a whole, it is worn out and useless. When a patented machine is acci-

dentally destroyed, or when it is practically worn out, the owner thereof, under the guise of repairing it, cannot make a new machine. In such cases, he must cast it aside and buy a new one from the patentee."

Other higher courts have clearly held that if a worn out part of a machine or other equipment is described separately in a patent claim all persons are liable in damages who make, sell or use the new part without authority of the patentee. And the same law applies to a thing or device comprising several parts. If it is worn out it must be discarded and cannot be repaired without heavy liability on the part of the maker, seller, purchaser or user.

History of Patents

Notwithstanding the above explanations, the United States Patent Laws were formulated especially for the purpose of creating interest in individuals who were naturally endowed with the inventive genius, so that they might be induced to exert this special faculty toward inventing new and improved things by which the public would benefit. Therefore, contrary to the opinion of the majority of persons, the patent laws were *not* formulated for the purpose of enabling inventors to hold a monopoly by which to obtain exorbitant prices for patented commodities and become rich, but for the purpose of inducing inventors to invent new things from which the *public* may benefit.

A leading higher court (21 How. 322) in commenting upon the patent monopoly, said:

"It is undeniably true, that the limited and temporary monopoly granted to inventors was never designed for their exclusive profit or advantage; the benefit to the public or community at large was another and doubtless the primary object in granting and securing that monopoly."

Therefore, it is quite apparent that although the patent laws give to inventors a perfect monopoly for a limited term of 17 years for ordinary patents and 3½, 7 or 14 years for design patents, these protective laws are intended to benefit the public, and to induce inventors to apply for patents and thereby disclose their inventions to the public.

However, going back to the early history of England the word "patent." was created by the King who gave to his influential friends and supporters the *exclusive* rights to import or sell the necessities of life



such as salt, sugar, flour, and the like. By these profitable inducements the holders of these valuable patent grants were caused to perpetually support the King by being enable to extort exorbitant prices and large profits for their products from the general public, and thus earn a luxuriant livelihood with little effort. Their original patent laws were exclusively for benefit of the patentees. However, our modern patent laws, as above explained, are for the final exclusive benefit of the general public, and for the benefit of inventors for limited periods depending upon classifications of patents.

Five Classifications

Modern laws classify patents as Mechanical, Process, Composition, Article of Manufacture, and Design. The four first mentioned classes of patents issue for 17 years. A design patent is granted for 3½, 7 or 14 years, as the inventor specifies by making increased Government fees, and when the longer terms are desired.

Mechanical patents issue on purely mechanical devices; Process patents protect any method of making an old or new article, whether the process is mechanical, manual or chemical; Composition patents are issued on things made from compositions of matter or mixtures of chemicals; Articles of Manufacture patents relate to articles which are manufactured but do not include any of the former classes; and Design patents relate exclusively to the *external appearance* of an article which must be *ornamental and attractive*. No mechanical functions may be protected by Design patents, and if the design of the article is to increase its efficiency a patent will not be allowed.

In Cantelo, 12 Pat. Law R 262, the exceptionally well written opinion of the court explains the rights of a patentee in the following language:

"The patentee has the sole right of making, using, and selling the articles, and he may prevent anybody from dealing with them at all. Inasmuch as he has the right to prevent people from using them, or dealing in them at all, he has the right to do the lesser thing, that is to say, to impose his own conditions. *It does not matter how unreasonable or how absurd the conditions are.*"

However, after expiration of a patent the patentee loses *all* of his former rights and any one may without any chance of liability make, sell, purchase, or use the invention.

Cannot Renew Patent

Contrary to the opinion of a majority of persons, an expired patent cannot be renewed. The patentee may obtain another patent on an *improvement* of the original patent, and he may go so far as to show drawing and include a description of the original invention but he can claim and receive a patent *only* on the improvement. The original invention remains unprotected and can be freely manufactured, sold, purchased or used by the general public.

Don't Be Misled

Many inventors and firms have formed the habit of imprinting on their manufactured product the terms "Patent Applied For", or "Patent Pending". However, these markings mean nothing more than the inventor has applied for a patent. He cannot sell and recover damages for infringement. In fact, unless an inventor receives a patent he has no more legal rights to stop infringement than a person who neither invented the device nor filed an application for a patent.



On the other hand, when an inventor files his application for a patent he may justly imprint upon his manufactured product the notifications "Patent Applied For" or "Patent Pending". In this manner he warns the public that he is endeavoring to obtain a patent. Many inventors, however, continue to im-

print these notifications on their products for many years after they have been notified by the Patent Office that a patent will not be granted. Thus a majority of persons are misled into believing that the inventor has, at least, some protection against others infringing his right when, in fact, hs has none.

Infringement Liability

Of course, it is very important for both purchasers and users to avoid infringement of patents.

Various courts have held that an infringer is liable to a patentee in an amount equal to all profits earned, plus any and all damages which may have been sustained by the patentee. And, if the infringement is intentional and wilfull the damages allowable may be three times the actual damages.

Recently, a higher court laid down the following rule:

A person or firm may be liable for infringement of a patent, under either of the following conditions: (1) if he uses it; or (2) if he makes it for his own use; or (3) if he purchases a part and combines it with other parts, which comprises an infringing device; or (4) if he conspires purposely or unintentionally with another and contributes in any manner to an infringement; or (5) if he purchases and resells an infringing device, although the purchase is made believing the one from whom the purchase was made had a license from the patentee to sell or use the device.

The Agent's Position

According to the old law, in the case of Nickle Company v. Worthington, 13 Fed. Rep. 392, the Federal Court held that a suit for damages cannot be maintained against engineers, officers, directors, Purchasing Agents, or shareholders of a corporation which infringes a patent, even where such persons personally conducted the business which constituted the infringement. This opinion was evidently based upon the principle that the artificial person, the corporation alone, is guilty and that none of its members or officials legally participate as individuals in acts done by it.

On the other hand, in the later case of National v. Terra Haute, 19 Fed. Rep. 514, the Federal Court substantially held the opposite doctrine that, in a suit for infringement of a patent, all parties who participate in the infringement are liable although some are simply acting as officers or agents of a corporation. This court held that all parties who take part in infringement are liable, and that no man can retreat behind a corporation, and escape liability for that in which he actually participates.

Also, this doctrine of the law has been sanctioned and enforced in Goodyear v. Phelps, 3 Blatchf. 91; Poppenhusen v. Falke, 4 Blatchf. 495; Iowa Barb Steel Wire Company v. Barbed Wire Company, 30 Fed. Rep. 123. It is based upon the rule that every voluntary perpetrator of a wrongful act of manufacture, use, or sale of a patented article becomes an infringer, and is legally responsible.

The modern law, therefore, regards officers, directors, and agents employing or authorizing or assenting to the use of the patented invention as infringers and personally responsible to the patentee. Another class of courts hold that the acceptance of the benefit, pecuniary or otherwise, springing out of the use or the sale of the patented article, or from the infringing act, is the test of liability.

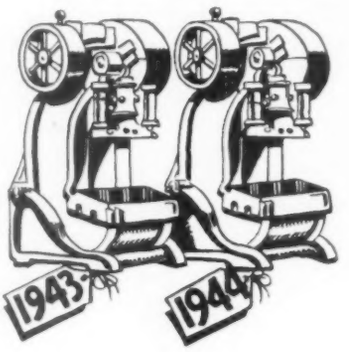
Modern Legal Effect

Today purchasers, and others, are liable in the same degree for patent infringement as always in the past. Many persons believe that under modern war conditions the patent laws have been permitted to become ineffective. However, this is not so. As always, Government may appropriate valuable patent rights, but reasonable payments must be made to the holders of the patents. Such "holders" may be licensees, patentees, purchasers of exclusive and non-exclusive patent rights, and all others who have been granted through proper and legal authority definite rights under a valid patent grant.

It is true that, under these present day unusual conditions, no legal holder of a patent, or rights under a patent, will be permitted by the Courts to retard termination of the war by insisting upon unreasonable delay in having such rights adjudicated. However, present patent monopoly is practically unchanged so far as the valid royality payments are concerned. Therefore, notwithstanding arguments to the contrary, inventors have at this period the same relative advantages as were held in the past. And purchasers are liable for infringement of valid patents.

In order to afford readers the advantage and opportunity of "knowing" minds of the courts in various patent litigations, we shall review certain decisions rendered during the past few weeks. A majority of the hereinafter cited cases were decided in June, 1944.

In the patent laws devices are patentable when they perform different functions in a different way. And inventors will be accorded protection against infringement of valid claims in their patents. See Reynolds, 141 Fed. Rep. (2d) 587.



If two inventors invent a machine which does the same kind of work in the same manner and with equivalent mechanism, the one who first filed the application for a patent and later reduced same to practice is the party who is entitled to recover for an infringement. See Mica 54 Fed. Supp. 327.

Whether a person is liable for infringement for rebuilding a patented device depends upon whether he replaced parts only partially worn out. See Landis Machinery, 141 Fed. Rep. (2d) 800.

Where a patent has been infringed the patentee cannot recover the profits earned by the infringer plus heavy damages, but under usual conditions the infringer is liable for the full profits he earned plus excess damages. See United Shoe Machinery, 54 Fed. Sup. 694.

An inventor who is not a pioneer in the new art is not entitled to the same broad protection as a pioneer, but he will be accorded proper treatment and given full credit for the invention which he made known to the public. See Derman, 141 Fed. Rep. (2d) 580.

A purchaser who sells a patented invention, without full authority of the patentee, is liable as an infringer. Also, such purchaser is liable if he only uses the invention. See Taver, 54 Fed. Supp. 574. Also, see Seagreen, 147 Pac. (2d) 682, where the court held that a person who has in the past manufactured and used a patented device under a valid license contract is liable as an infringer, and also are the users, if

Continued on page 29



IX. Contract Policies

By MARY E. O'CONNOR

THE State purchasing officer is authorized to establish, and from time to time to amend or repeal, subject to the approval of the Governor, administrative rules and regulations prescribing the conditions under which and the manner in which all functions of the Division of Standards and Purchase are to be exercised. These rules can also be issued in the form of a manual. The provisions of such a manual, contingent upon the extent of statutory authority actually granted, should clarify and distinguish between the authority reserved to the purchasing officer and that delegated to the respective state agencies at his direction. They should also indicate the articles, equipment, materials, supplies, and contractual services to be directly purchased or contracted for by the purchase division, prescribe the procedure to be followed in both centralized and open-market purchasing, and instruct the local purchasing agents in all matters relating to cooperation with the Division of Standards and Purchase.

Before becoming effective, the rules should be submitted to the Governor and to all state agencies. In the event of controversy over any of the proposed regulations, or of suggested changes, additions, or deletions, the recommendations of the dissenting officials should be submitted to the Governor and his decision should prevail. Rules which are not protested should become effective ten days after the date of issue. The Governor should, of course, have the right to waive the ten day posting period at his discretion; in this case any rule would become immediately effective over his signature.

The suggestion that rules become effective without formal endorsement by the Governor is a departure from the procedure authorized by the New York State purchase statute. There seems to be no need for the Governor to give time to matters which are not in dispute. If a rule is inferentially acceptable to all state agencies, through their failure to question or criticize, the mere filing of a copy with the Governor should be considered acceptable procedure, since executive approval is intended primarily as a check on any autocratic tendency on the part of the purchase author-

Table I

INFORMATION INCLUDED IN THE MANUAL OF RULES AND REGULATIONS

- Statutory authority
- Exemptions
- Authority to receive bids and sign purchase requisitions
- Inventory
- Emergency purchases
- Automotive equipment
- Printed matter and paper supplies
- Submission and revision of requisitions
- Institutional, industrial, and home products
- Placing of orders
- Inspection of deliveries—responsibility of local agents
- Checking weights and measures
- Storage and distribution of supplies
- List of centralized contract commodities
- Adherence to contract specifications and purchase terms
- Listing and defining open market purchases
- Procedure in open market purchasing
- Award of open market contracts
- Releases from competitive bidding
- Default of bidder or contractor
- Etc., etc., etc.

ity. The purchasing officer should have the right, however, without publication or recourse to the Governor for approval, to suspend provisions in his own rules in particular instances having to do with forms or routine procedure, or to correct an unintentional error, but this privilege should be exercised only within the provisions of the statute.

Requisitions

The proposed statute requires that purchases for state agencies, whether made centrally or through open-market purchasing, are to be made only upon requisitions approved by the state purchasing officer. He alone has the right to authorize any state agency to make necessary purchases in the event of real emergency without such prior approval; in such a case a covering requisition is to be filed subsequent to the purchase. Since control of purchasing would be ineffective without control of use, the purchasing officer is authorized to examine each requisition and revise it as to quantity, quality, or estimated cost; revision as to quality should be made only in accordance with his standards and standard specifications.

The purchasing officer should determine the terms, number, amount and form of requisitions, and the information which must be furnished in connection with them. Because of the cost factor, the number of requisitions should be kept to a minimum. Requisitions may be in the form of estimates, requirement lists, or purchases orders, as further defined in the manual. In some states an estimate system is set up by statute to control finances and expenditures, to permit the mortgaging of funds in advance of purchase. Therefore, this system is recognized in the plan outlined.

Under the planned procedure, orders are placed directly by the using agency except for printing. Printing orders should be placed with the vendor through the Printing Bureau of the Division of Standards and Purchase, with the possible exception of printing to be done pursuant to law by the state, with its educational and other agencies.

Each requisition submitted to the purchase division should carry a certification that the purchases, rentals, or services enumerated are actually needed in the best interests of the state. This should be verified and subscribed to by the fiscal authority, if such exists, and further substantiated by the purchase division's own records and inspections. The purchasing officer should compare requisitions made by the various agencies for uniformity and efficiency in like service, and for coordinating purchases, promoting bulk purchasing to the exclusion of expensively packaged merchandise, and of effecting economies throughout the state service.

The term "open-market purchasing" is used to describe contracts and purchases made by local agents under authorization of the state purchasing officer, as distinct from the "centralized purchasing" of commodities and services reserved directly to the Division of Standards and Purchase.

This discussion again reverts to our theorem that the plan of standardization and purchase calls for a small beginning, with a gradual absorption of all purchasing into the central office. The saturation point at which all purchasing by local agents will have been absorbed into the centralized system is still far distant for many of the states. During the period of transition, therefore, a plan sponsored by the purchasing officer must be operative.

Open-Market Purchasing

This open-market purchasing should be held, however, to a sensible minimum. The procedure is unscientific and cumbersome, considering present day facilities. Duplication of costs and efforts are necessary for each individual purchase, whereas in centralized purchasing, once the initial work of bringing the requirements together has been completed, the effort of purchasing for all agencies is not much greater than that of buying for one.

The philosophy, objectives, responsibilities, legality, and ethics of open-market purchasing are synonymous with those of centralized purchasing. All of the routine of centralized contract purchasing in volume is not, naturally, adaptable to open-market purchasing in much lesser amounts, but this distinction is clearly drawn.

It may be desirable in some localities to require that all bidders to individual institutions or other agencies shall register with the central purchasing agency and subscribe to the standardized general specifications and purchase terms. In this case the Manual of Rules and Regulations should require that prospective bidders shall so register and subscribe to the Bidders' and Contractors' manual as a condition to submitting competitive bids.

Any person, firm or corporation considering the advisability of bidding for state contracts would appreciate advance information as to just how the state does business. If contract and purchase terms are based on the whims or tenets of individual purchasing agents, and if they are likely to vary with each bid, responsible business houses will not care to submit bids. On the other hand, if these terms are standardized and based upon a definite policy, there will be much more interest in bidding for state business. To be sure, a combination of all these general terms makes a rather sizable document, but as long as they are standard and not subject to frequent change, their bulk will be offset by the fact that they are not repeated in every proposal issued. The printer's date will identify the issue, and if it seems advisable amendments can be especially marked.

In centralized purchasing for government, then, it has been found to be good practice to assemble these general purchase and contract terms into a Bidders' and Contractors' Manual, to which is appended a voucher form. This is signed and returned and becomes a record signifying understanding and acceptance of the terms by the signee. A



prepared schedule is returned with the voucher, checkmarked to indicate the commodities or services in which the prospective bidder is interested. The vendor is then placed on the mailing list of the Division for the specifications and proposals which he desires to receive.

General specifications and purchase terms that apply to matters of purchase and contract in a centralized government system, as distinct from specifications for commodities, are contained in this manual. Items included are listed in Table II. These proposed terms apply to centralized contracts and purchases reserved to the Division

of Standards and Purchase. They are applicable to open-market purchasing only when agreement to that effect has been specifically incorporated in the proposal.

All applicable terms of the manual apply to each centralized contract and purchase unless specifically waived or amended in the call for bids.

Centralized Contract Purchasing

Under the rules and regulations established, it is presumed that the bulk of state purchases will be made under contracts awarded centrally through the Division of Standards and Purchase, as distinct from the lesser number and volume of contracts and purchases which local agents will be authorized to negotiate.

The purchasing staff should assemble definite information about the commodities known to state agencies as "Staples"—equipment, materials and supplies which constitute the state's most general needs and which are, therefore, the first to be considered for standardization—and about the sums and quantities involved in their purchase. These items should be classified into groups according to trade interests, and schedules or lists should be prepared for the information of state agencies and the trade. Similar procedure will apply to contractual services. The rules and regulations should further provide that such items are to be purchased only from state contractors, except as otherwise specifically authorized.

Table II
INFORMATION INCLUDED IN THE BIDDERS' AND CONTRACTORS' MANUAL

- **Eligibility of bidder and contractor**
- **Bid and contract terms**
- **Submission of samples and literature**
- **Requirement of security — bid bonds, deposits, contract bonds, protection of the state against damage or loss because of injury to persons or property, insurance against theft, fire, etc.**
- **Obtaining permits and licenses, and payments for the same**
- **Payment of fees, taxes, tolls**
- **Provisions governing quantities, prices, discounts**
- **Packaging and delivery terms**
- **Form of contract**
- **Basis of award of contract**
- **Confirmation of award**
- **Responsibility for and terms of delivery**
- **Inspection and tests**
- **Payments for purchases**
- **Compliance with applicable statutes**
- **Handling of requisitions and orders in the purchase division**
- **Bid opening procedure**
- **Etc., etc., etc.**

Geography and Deliveries

A commercial purchasing agent worthy of the name would not attempt to take over his assignment without thoroughly familiarizing himself with the plant he is to represent. Likewise, a state purchasing officer should not accept his responsibilities without making an adequate survey of his plant—the state itself.

It is essential for him to study the markets and transportation systems of the state—the railroads, rivers, canals, highways and trucking routes. He must learn the location and purpose of every state building, together with its storage



facilities, cold storage plants, terminals and delivery facilities. The location, size and character of each state agency should be charted on a map. A shipping directions list should be made up to show the names of the agencies and their post office addresses, railroad terminals for both car-lot and smaller deliveries, sidings and docks on state premises, nearest express stations, and whether within bounds for free delivery. For convenience, the names of the superintendents or department heads, and of the stewards or local purchasing agents, should be added to this list.

The Contract Period

The secret of efficiency in purchasing where the staff is small, is to keep contract items under contract at all times. This can be accomplished by planning in such a manner that there will be no lapses between contract periods.

The buyer should avail himself of all possible sources of information in scheduling purchases. He should familiarize himself with trade journals, bank reports, market reports, government surveys, forecasts of crop conditions, stock control charts and other available records. He should also study normal and abnormal trends, economic conditions, seasonal variations, labor conditions, transportation facilities, etc., in order to assess the advantages that may come from contracts of long or short duration.

His plan of purchasing should coincide as far as possible with favorable markets, keeping in mind the fiscal or estimate period applying to state institutional purchases. Regardless of the state of the market, however, it is the buyer's responsibility to have food, fuel, clothing, and other supplies and equipment on hand when they are needed. Because in many instances he is handicapped by lack of storage and other limitations, he must give primary consideration to supply rather than price. Indeed, continuity of supply takes precedence over all other considerations. The situation does not lend itself to speculation on markets.

Long term economy and good business practice suggest conservative procedure in establishing contract periods. Purchasing officials functioning during the past quarter-century have acquired a wealth of experience in the study of markets. Some years ago, when the country was nearing the peak of the boom period after World War I, prices rose faster than appropriations. Because of those rising markets, policy dictated long term contracts and an economical use of supplies and equipment. But later the advent of the depression brought about a situation in which current appropriations had buying power about 25 per cent greater than had been anticipated when the budgets were



planned. The rapid decline in prices dictated a change in policy to short term contracts, as well as a complete revamping of procedure to avoid overstocking on a falling market. Subsequent market conditions, and World War II, again brought a reversal of the trend and a period of rising prices and of commodity shortages.

Even aside from emergency situations resulting from war, scarcity, and rationing, purchasing officials have had to balance their programs carefully to cope with varying conditions, and to avoid being accused of penury on the one hand or of reckless spending on the other. Recently they have had to substitute a national and even a world-wide interpretation of public welfare for the more usual local interpretations. They have learned that their organizations must be well informed and versatile in order to make the most of economic, physiological and psychological trends as they develop.

Staple Commodities

Staple commodities should be purchased on so-called term contracts, if it is inadvisable for the state itself to warehouse a needed quantity at time of purchase. Staple groceries, textiles, etc., can be contracted for on the basis of a term of one, three, six, or twelve months. Undoubtedly, much the best contracts can be made for quantities required for six months or a year, to be delivered within thirty to ninety days. Government agencies generally do not take sufficient advantage of this type of contract. Such contracts, however, should be used advisedly, and only after careful consideration has been given to the type, quantity, bulk, and perishability of the commodity, as well as to the conditions of storage available, the costs of handling and storing the articles, stock control methods in use, the competency of personnel, and the degree of cooperation that rightfully can be expected from each state agency.

Food Supplies

The purchase of perishable foods and similar supplies presents many special features, since each commodity is a problem within itself. A contract can be made for six or possibly nine months' supply of canned fruits and vegetables for prompt delivery, once the season's crops are known and the market prices established. Delivery should be completed within a short period, commensurate with local warehousing facilities in each instance, and the purchaser should be protected against loss by the standard trade guarantees against swells, springers, etc.

In the New York State area, it is standard trade custom to buy April eggs and June butter for storage—that is, such commodities produced in those seasons or under average April and June weather conditions. Since the commercial butter and egg business of the state is conducted on this basis, it would seem feasible for government to profit by the experience and buy at least a part of its requirements of these products in the same manner.



If the state itself lacks proper storage, these supplies can be placed in public cold storage plants, covered by insurance, and withdrawn as needed. There should be guarantees, of course, that the merchandise will be carried at temperatures and under conditions that will fully protect its quality.

There comes a time of year, however, when storage warehouses are practically empty, and when fresh stock is almost as low in price as the supplies in storage. During this season, government buyers should again follow the lead of private industry and arrange to take advantage of this condition, under properly protective specifications and inspection.

Meat Purchases

The advisability of purchasing meats for a contract period of even three months is questionable under ordinary trade conditions. Meats are bulky and require proper and ample cold storage facilities which are usually not available except in the case of a few institutions equipped to handle car-lot quantities. Whatever the term of the contract, therefore, it is usual to require meat deliveries weekly or even semi-weekly.

Meat vendors are classed in two major groups—packers and independent dealers. The packers generally seem to be in a more favorable position to bid on long term con-



tracts, but it is a matter of record that in some markets the state pays much higher prices for its meat supply when the independent dealers have been eliminated from the field of competition. Responsible dealer competition tends to stabilize the market from the standpoint of purchasing. Whatever the reason, the independent dealer generally raises his prices materially on a three-months contract as compared with the prices he would quote, on the same date, for a thirty-day delivery period. The bid of the packer usually does not reflect the same ratio of increase.

The meat market fluctuates rapidly because it is greatly influenced by seasonable supply and demand, weather conditions, transportation tie-ups, and the like. While a particular dealer may misjudge the market and quote too low a price on a three-month contract, based on markets at the time of bidding, an efficient purchasing officer is not interested in that kind of low bid, for it may result in continual friction between the contractor and the state. Furthermore the costs of inspection necessary to guard against delivery of meats of inferior quality commensurate with the low price quoted, will increase substantially.

A three months' contract made on a high market is an expensive luxury; conversely, a three months' contract made on a low market represents a substantial saving, but in any long term contract there is involved a gamble against experience in this particular field. It is safe to assume that the packer knows more about the probable course of the market than does the purchasing officer, and the former is much more likely to gamble advantageously. If an advance in the market is anticipated the bidder will figure his prices accordingly, but he is not so apt to advise the purchasing officer of a prospective price drop.

Since these purchases run into considerable quantity and money, a thirty or at most a sixty-day meat contract is generally advisable. Possibly this situation does not apply in all markets; the facts can be readily checked by tabulating trade journal

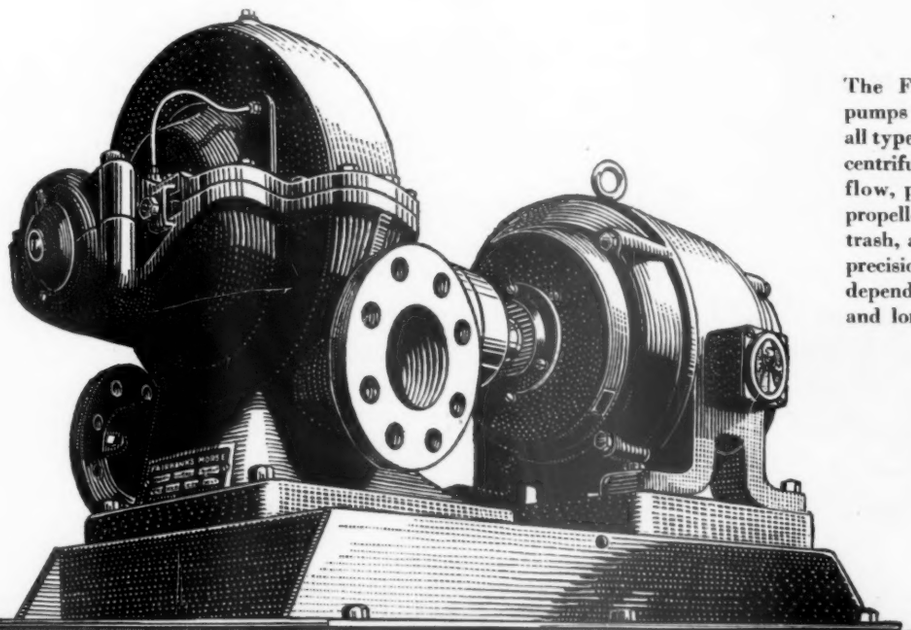
Continued on page 286

A name worth remembering!

FM

FAIRBANKS-MORSE

After the war, the name Fairbanks-Morse will continue to mark performance-proved products only, as it has for 114 years. No race to get civilian products onto the market early will tempt us to break this pledge.



The Fairbanks-Morse line of pumps is complete and includes all types — centrifugal, split-case centrifugal, built-together, angle-flow, power, rotary, turbine, propeller, paper stock, sewage, trash, and many others. All are precision built to give efficient, dependable, low-cost operation and longer trouble-free service.

BUY MORE WAR BONDS

DIESEL LOCOMOTIVES • DIESEL ENGINES • GENERATORS • MOTORS • SCALES • PUMPS • STOKERS • RAILROAD AND FARM EQUIPMENT

FAIRBANKS, MORSE & CO., CHICAGO 5, ILLINOIS

New PRODUCTS · IDEAS

Purchasing Agents and their Assistants are invited to Check the Coupons on the "Know-How" Pages, Nos. 10, 12, 14 and 16, for late catalogs and bulletins on New Products, Materials, Finishes, Equipment, etc.

SOLDERING STAND

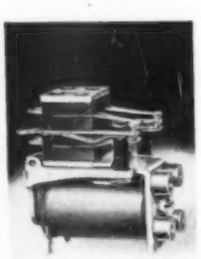


ILLUSTRATION shows soldering stand developed by the Ess Specialty Corp., Bergenfield, N. J., which is said to offer maximum protection against injurious fumes, hand fatigue, eye strain, etc. Stand permits maximum freedom for work passing, enables operator to focus attention on the soldered joint by means of the magnifying or plate glass window. This Model SS10 is supplied with a cast bracket for mounting on assembly tables, or is available on wood base. The fume stack is 3" x 9¼" x 32" high.

NEW H. F. PLASTIC PREHEATING EQUIPMENT

ILLITRON is the name of new high frequency plastic preheating equipment announced by Illinois Tool Works, 2501 N. Keeler Ave., Chicago, Ill. Machine is designed specially for easier, faster preheating of plastic preforms, e.g., wood flour, rag and mica filled phenolic. Unit is said to be of exceptional value in preheating preforms for multi-cavity molds.

TELEPHONE TYPE RELAY

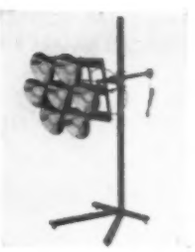


ILLUSTRATED is new model TKL telephone type relay developed for maximum magnetic efficiency with resultant sensitive operation at minimum power output, announced by the Allied Control Co., Inc., 2 East End Ave., New York, N. Y. It was specifically designed for high frequency use. Weight and dimensions, less contact pile-ups, are 1½ ounces and 1 7/16" long by 15/16" wide x 1 1/16" high.

RIVNUT NOW MADE OF BRASS

THE rivnut, blind fastener which serves as nut-plate, rivet or both, is now being made of brass as well as aluminum, according to the B. F. Goodrich Co., Akron, Ohio. Tensile and shear strength of Rivnuts made with the brass alloy are about 50% greater than those made from aluminum it is said.

PORTABLE INFRA-RED UNIT



PORTABLE radiant energy equipment to facilitate baking, drying, dehydrating and preheating operations, is announced by the Fostoria Pressed Steel Corp., Fostoria, Ohio. Unit is styled the model P-7-IR. It may be used in single or multiple assemblies. Adjustable features of the cross arm on the upright and the reflector yoke allow the radiant energy to be directed at various angles from a height of 18" to 6 feet. Line drawings show the versatility of the unit and how it can be adjusted to multiple positions without fear of tipping. Electrical load is only 1700 volts.

WATER SOLUBE PAINT STRIPPER

HIGHLY efficient, water-soluble paint stripper that loosens paint for speedy removal with water has been developed by Turco Products, Inc., 6135 So. Central Ave., Los Angeles, Cal. According to manufacturer the hosing off of an application of this stripper leaves a clean, paint free, water break free surface requiring very little after treatment. New material is known as Turco Stripper L-780. It is said to be non-corrosive on metals, and safe os wood. It is applied with brush or spray and left on the surface from 5 to 20 minutes.

INDIVIDUAL DUST COLLECTOR



COMPACT, self-contained unit, known as the Delta - Milwaukee Dust Collector, designed for use with an individual machine used in grinding, polishing, buffing, sanding or any similar operation, is announced by Delta Mfg. Co., 620 E. Vienna Ave., Milwaukee, Wis. It is activated by fan which sucks both fine and heavy dust and small particles through permanent, cleanable air filter. Cabinet is of pressed steel. It is provided with special fittings for attachment to Delta machine tools.

ALL-STEEL INDUSTRIAL FLUORESCENT FIXTURES

ALL-STEEL fluorescent fixture is announced by Mitchell Manufacturing Co., Chicago, Ill. New units include 2-40 watt, 3-40 watt and 2-100 watt models. Power-factor is said to be over 90%. Lamps operate on 110-125 volt 60 cycle ac, although they are available in higher voltages.

SCALE BALANCES BLADES



NEW scale announced by The Howe Scale Co., Rutland, Vt., is for static balancing of airplane propeller blades to precision limits. Blades can be brought to standard balance thus facilitating assembly of new propellers and making it possible to replace broken blades at field bases. Butt end of blade is inserted into clamping socket until it touches two contact stops set same distance from fulcrum pivot as butt would be from center of hub of propeller shaft.

(*Continued on page* 118)

SAFE



High pressures, high velocities, high temperatures . . . stresses and strains, corrosion and erosion . . . *all* factors which tend to undermine safety in piping are resisted by *Tube-Turn seamless welding fittings.*

Laboratory and field tests conducted regularly demonstrate how Tube Turns' *exclusive* forging processes increase serviceable life by improving grain structure in the metal itself, and thus reduce wear at the most vulnerable points of a piping system — where flow direction changes! Write for Catalog 111 — it contains data valuable to all who buy, specify and install piping and welding fittings.

VALUABLE WALL CHARTS



Dimensional data on Tube-Turn fittings and flanges are shown on these two handy wall charts, sizes 24 x 36 inches—sent free on request.

Selected Tube Turns Distributors in every principal city are ready to serve you from complete stocks.

TUBE TURNS (Inc.) Louisville, Kentucky. Branch Offices: New York, Chicago, Philadelphia, Pittsburgh, Cleveland, Dayton, Washington, D. C., Houston, San Francisco, Seattle, Los Angeles.

TUBE-TURN
TRADE MARK
Welding Fittings and Flanges



Here's eye and face protection from front and sides for men and women. The Willson Protecto-Shield with its resilient plastic visor withstands extra impact. Tough brow guard protects the forehead.



Lighter weight and smart appearance of the Protecto-Shield makes it popular to wear. Quickly adjustable head band gives a perfect fit over a hair-do or a man's head.



Comfort begins with the swing up feature. Light weight and comfortable fit permit the Willson Protecto-Shield to be worn for a full shift.

Ask your Willson Safety Equipment Distributor for further information on the Protecto-Shield for light grinding, woodworking *and* spot welding. *Or write for descriptive bulletin.*

GOGGLES • RESPIRATORS • GAS MASKS • HELMETS

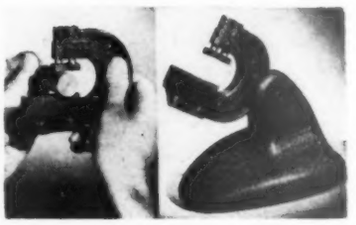
DOUBLE WILLSON

PRODUCTS INCORPORATED

READING, PA., U. S. A. *Established 1870*

(*Continued from page* 116)

EXTENDED ANVIL GAGE



EXTENDED anvil adjustable snap gages marketed by Sheffield Corp., Dayton, O., are said to offer many advantages. Work is located easily and quickly aligned with the gaging anvils, and smooth, even approach of the gage to the work eliminates uneven wear of the lower anvil and prolongs its life. A.G.D. locking devices are used on the adjustable anvils. Square type anvils are furnished as standard-pin type may be supplied on request. Twenty-five standard models cover

DIAL INDICATOR SNAP GAGE

SNAP gage by which the inspector can see rather than feel the variations in the dimensions, equipped with dial indicator, and known as Model 1330 P-100, is announced by Federal Products Corp., 1144 Eddy St., Providence, R. I. Weight of gage in operator's hand rests upon a fixed contact and not upon a sensitive contact. Lower anvil is retractable which makes it easier to apply and eliminates all excuses for marring the surface of highly finished workpieces. Unit is easily adjusted, and weighs only 15 ounces. Literature available.

FOUR MAGNIFICATION RANGES



COMPARATOR having four magnification ranges, enabling work to be checked over wide range of tolerances, is announced by Continental Machines, Inc., 1301 Washington Ave., So., Minneapolis, Minn. Spindle is equipped with variable pressure adjustment to provide for exact pressure required for measuring thick or thin section, as well as for hard and soft materials. Spindle movement is magnified electrically assuring exact repeat readings. Gage heads swivels 360° in horizontal and vertical planes. Three models are offered, each having four ranges of magnification. Comparators operate on 110 volt, 60 cycle, AC current, and are protected so that accidental plugging into a DC current outlet will not damage them.

CERAMIC INSULATION WITHSTANDS 200 DEG. C

PROCESS for depositing a thin ceramic coating on copper, nickel and other types of wire has been developed by Sprague Electric Co., North Adams, Mass. This new insulation is known as Ceroc 200. When applied to copper wire it maintains desirable electrical characteristics at continuous operating temperature of 200 deg. C. Coils wound with it dissipate heat rapidly, and there is little or no tendency toward the development of hot spots. Preferred thickness is ¼ mil. Coating is uniform. Round Coils can generally be wound satisfactorily. Printed matter and samples available. Present preferred ranges are copper wire, 3 to 30 mils (#40 to 21 AWK;) Nickel wire, 1½ to 12 mils. (#46 to #28 AWG.)

GREASE SEPARATOR



FLOW control designed to automatically prevent waste-water passage in volume above the rated capacity of interception chamber, features Zurn Greaseptor. Manufacturer states it is the first automatic overload feature of its kind ever built into a grease interceptor, and claims following features: no maintenance or replacement of parts; fitted gate for optimum flow rate; flush-cleaning by merely touching control handle; internal expanding walls insure free flushing of trapped solids; elimination of waste spillage during cleaning period. J. A. Zurn Mfg. Co., Erie, Pa.

SPRAY BOOTH SAFETY & SAVING

TRAVERSIDE is the name of potent but harmless powder developed by Penetone Co., Tenafly, N. J. for introduction into the circulating water at the rear of waterfalls type of spray booth. It is said to prevent the overspray from fouling the flood sheets, nozzles, and circulating system and also prevent the metal back-set from corrosion and rust. It is said to maintain ideal pH value for long periods of time. Use of Traversite is claimed to make the operation less of a health hazard and remove a fire hazard by preventing pigments from collecting in the exhaust stack. Manufacturer says is equally effective with waterfall or waterwash type of equipment.

(*Continued on page* 120)

Steel takes the Backache out of Monday



THIS is Monday in Europe. Even after the war, this age-old routine, familiar to every Continental village, must continue. Steel is too scarce and too expensive over there for most people to enjoy the household facilities that we take so much for granted.

Plentiful, low-cost steel relieves American women of drudgery--makes available to the masses the "luxuries" of running water, automatic laundry equipment, refrigerators, ranges. There is no other metal sufficiently abundant or suitable to take over this job.

For 42 years, Youngstown has helped to convert America into a nation of running water--supplying millions of miles of durable, low-cost steel pipe, fabricated by constantly improved, more efficient methods. Youngstown has also supplied steel sheets for millions of washers and tubs, ranges, refrigerators and other home equipment.

Now, war's demands for steel are being satisfied. But soon we shall resume the unfinished job of suppling you, our customers old and new, with dependable, economical pipe and sheets to further eliminate drudgery and advance the American standard of living.



YOUNGSTOWN

THE YOUNGSTOWN SHEET AND TUBE COMPANY

YOUNGSTOWN, OHIO

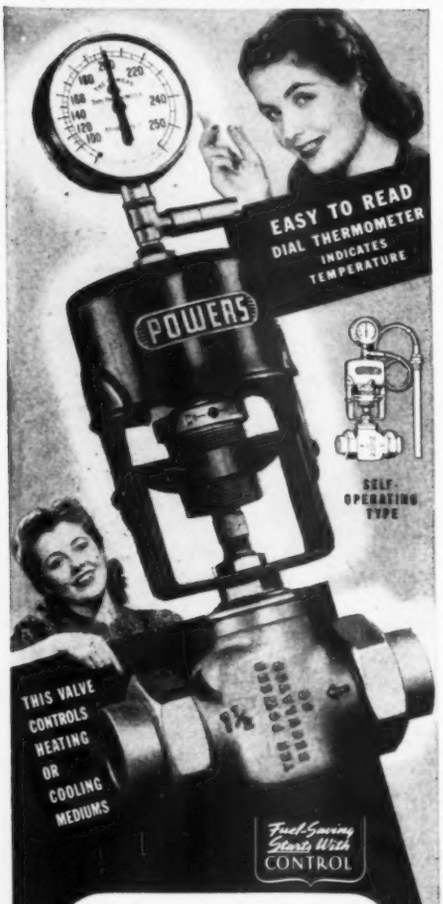
Manufacturers of

CARBON - ALLOY AND YOLOY STEELS

Pipe and Tubular Products - Sheets - Plates - Conduit - Bars - Tin Plate
Rods - Wire - Nails - Tie Plates and Spikes - Alloy and Yoloy Steels

Economize WITH POWERS

TEMPERATURE REGULATORS



Use a Powers No. 11 Temperature Indicating Regulator when you want the advantages of an easy-to-read dial thermometer combined with a dependable self-operating regulator. The dial thermometer gives a visual check on the performance of the regulator and makes it easy to adjust for the required operating temperature. Various dials and ranges are available.

Is Easy To Install—because both the thermometer and the regulator operate from the same thermal system—only one tapped opening is required.

Write for Circular 2511

THE POWERS REGULATOR CO.
2792 Greenview Avenue, Chicago 14, Illinois
231 E. 46th St., New York 17, N. Y.—Offices
In 47 Cities . . . See your phone directory.
70

OVER 50 YEARS
OF AUTOMATIC TEMPERATURE AND HUMIDITY CONTROL

(Continued from page 118)

RAPID WATER ANALYSIS APPARATUS

PRECISE method for the determination of hardness, calcium and magnesium in waters, both industrial and potable, known as the Aero-Titrater, is announced by the Chief Chemical Corp., 1123 Broadway, New York, N. Y. Manufacturer states accuracy is comparable with lengthy and laborious gravimetric methods, and substances ordinarily present in water do not interfere. It can be used with samples which contain chlorides up to 2000 ppm, or sulfates up to 1000 ppm, nor to iron concentrations or water treating materials interfere. It is said to be simple in operation.

TOOL STEELS CAST TO SHAPE



TOOL steels are being cast-to-shape for commercial applications by the Cast-to-Shape Division of Jessop Steel Company, Washington, Pa. Savings of time, labor, material, and machining costs are claimed. All castings are furnished in the annealed condition to facilitate machining. Patterns may be furnished by customer or made in the company's shop from blueprints. Literature sent on request.

FOR NON-SLIPPERY DURABLE FLOORS

FEREM is the name of product developed by A. C. Horn Co., Long Island City, N. Y., which is said to make tough, durable floors which are not slippery, show little wear for long periods and involve practically no upkeep costs. It contains no sand, stone or silica, and requires only the addition of cement and water. The Ferem "Blue Temper" Floors are said to be unusually resistant to wear, water and chemical disintegration. Principal component of Ferem has a rating of 9 in hardness on the Mohs scale, one point less than that of the diamond. Floor toppings are said to have approximately four times the compressive and tensile strength of ordinary cement topped floors.

PRECISION GAGE INSTRUMENTS

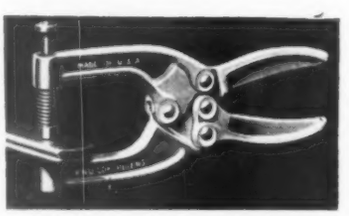


COMPLETE line of gage instruments to fill demand for broader application of gage blocks, is announced by Continental Machines Inc., 131 Washington Ave. So., Minneapolis, Minn. There are 20 instruments in the set, and in combination with gage blocks it is said that they will perform practically all precision measuring functions. Instruments will not shrink or grow over a period of time. Combinations will hold their accuracy. Entire set is available in a specially made walnut case. Also sold separately in solid wood instrument case.

PORTABLE ELECTRICAL HOT WAX DIP TANKS

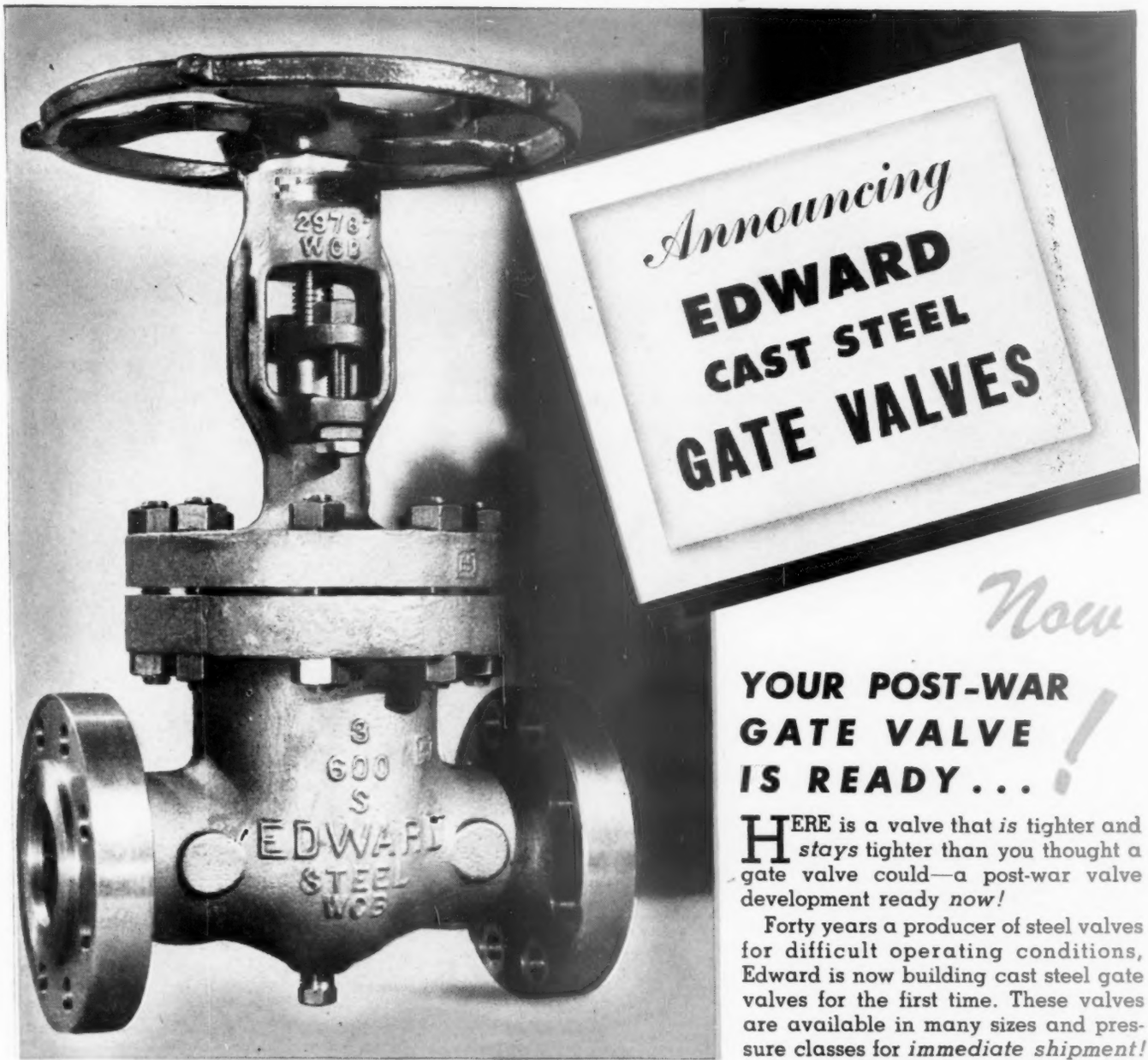
TWO new electrically heated, portable hot wax dip tanks, to meet requirements for wax-dipping of packaging for overseas shipment, have been developed by Aeroil Burner Co., West New York, N. J. The portable unit features two hot wax dip compartments in one tank. Waxmaster Senior is a larger adaptation of the portable, with dipping space 25" x 25" x 9¾", and will heat and melt up to 24 lbs. of solid wax in 50 minutes, according to the maker. The two models are equipped with dip baskets, heavy duty grills, built-in thermometers and thermostats giving automatic heat control from 100 to 550 deg. F. Both models are mounted on casters. Can be had with skid mounting.

IMPROVED PLIER



IMPROVED plier announced by Knu-Vise, Inc., Detroit, Mich., introduces a self setting pressure spindle to compensate for variations found in the thicknesses of metal or parts clamped. It is styled Vari-grip. It compensates for differences in thickness that may vary up to ⅜". It is 8 in. long and weighs 22 oz. Throat capacity is 0 to ⅞"; depth 2⅝".

(Continued on page 124)



Announcing

EDWARD CAST STEEL GATE VALVES

Now

YOUR POST-WAR GATE VALVE IS READY...!

HERE is a valve that *is* tighter and *stays* tighter than you thought a gate valve could—a post-war valve development ready *now!*

Forty years a producer of steel valves for difficult operating conditions, Edward is now building cast steel gate valves for the first time. These valves are available in many sizes and pressure classes for *immediate shipment!*

Flow is straight through and unobstructed, yet globe valve tightness is achieved through fundamental differences in design. Specially developed testing methods prevent any Edward gate valve passing test unless *both* faces, *not just one,* are absolutely drop tight *simultaneously.*

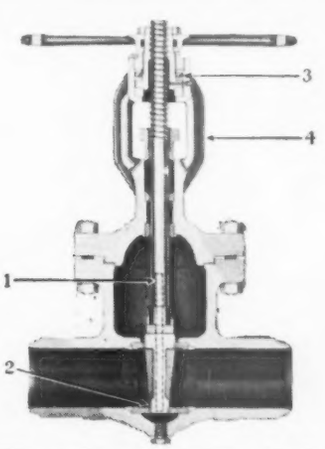
✓ *Check These* UNUSUAL FEATURES

1 Close fitting wedge guides welded to body *after* seat rings and wedge are located to assure perfect alignment and eliminate unnecessary wear-producing drag of wedge across seating faces.

2 Perfectly positioned hard surfaced seats, integral with body.

3 Simple yoke construction with ball bearing operation even in medium sizes, EValized surfaces where abrasion is a problem, and no superfluous parts.

4 One piece bonnet for absolute alignment, easy operation, minimized maintenance.



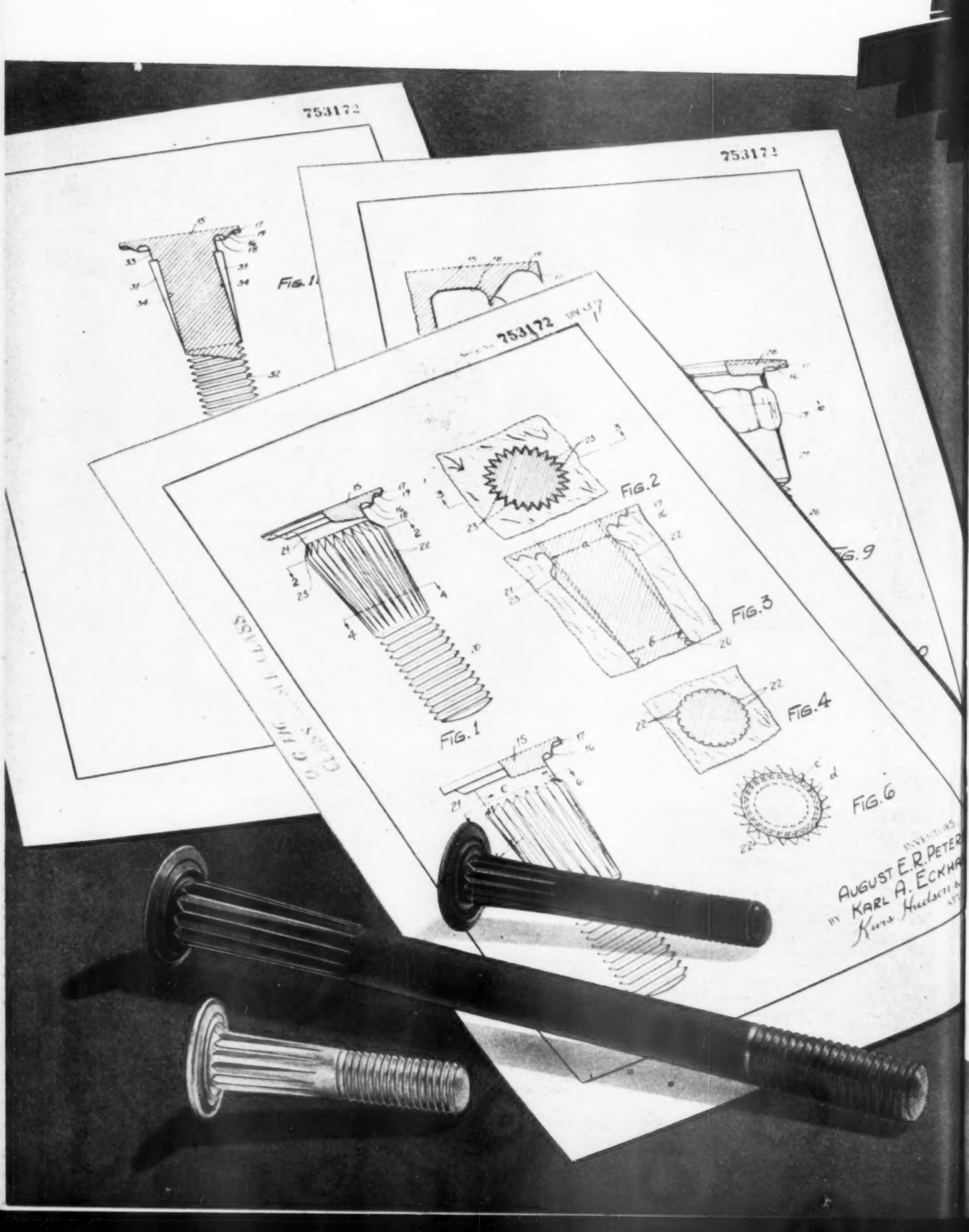
NEW CATALOG READY

Just off the press! Catalog 12-E1 with illustrations, dimensions and descriptions of Edward cast steel gate valves for 150 to 3600 lb service. Write for your copy.

THE EDWARD VALVE & MFG. CO. INC., EAST CHICAGO, INDIANA

EDWARD *Steel* VALVES

U. S. Patent No. 2056688



...AND WHAT IT MEANS TO YOU IF YOU MAKE WOOD ASSEMBLIES AND WANT TO CUT YOUR COSTS!

U. S. Patent No. 2056688

● For many years builders using wood material joined to wood, or wood joined to steel or iron, have relied upon Carriage Bolts in their assemblies. If projecting bolt heads were objectionable, the wood was counterbored and the Carriage Bolt head pulled down into the recess. This brought the bolt head flush with the wood surface, but left an unfilled hole around it that quickly collected dirt and dust, and then moisture.

Soon, rust formed and the bolt head began to release the brown stain of rust through the exposed wood fibers. Continuous presence of moisture rotted the wood, and eventually caused the bolt to become loosened under vibration or stress.

This "cause and effect" has continued, until now there is a means to eliminate the disadvantage of such construction with Carriage Bolts in counterbored holes.

Our engineer in charge of the development studied existing types of bolts used in wood construction. He designed some bolts to overcome certain difficulties.

Tried out, they still left something to be desired. He persisted. More investigation, more interviews, more experiments ensued. Finally he submitted sample bolts of the final design to railroad car builders—for use on wooden box cars which are exposed to all kinds of weather every day in the year.

Lamson *Weather-tight* Bolts came through and met all demands in this severe test under practical conditions of the worst imaginable weather.

They kept box car interiors dry because they did not let moisture through beneath the head of the bolt. They made weather-tight construction a "sure thing".

If you have wood assemblies to make—consider Lamson *Weather-tight* Bolts when you design or re-design. In competition with Carriage Bolts in counterbored holes, Lamson *Weather-tight* Bolts actually cost less to use. Where counterboring is not needed, the slight cost differential is a negligible factor. Further information on request and samples for any tests you care to make.

THE LAMSON & SESSIONS COMPANY, General Offices: Cleveland, O.



"BOLTS, NUTS & SCREWS"—1944 REVISION, Cloth bound, Limited edition, 180 pages of technical, practical information. Sent prepaid for *$1.00—cash or check must accompany your order.*

"BOLTS ARE IMPORTANT!"—24-page booklet of currently useful information for buyers of headed and threaded products, and describing Lamson & Sessions' specialty fastenings which have wide industrial applications *—now, and in the post-war period. Sent gratis.*

"THE LAMSON BLUE BOOK"—is our standard Catalog of standard products excepting our Aircraft products. *Sent gratis.*

"SIMPLIFIED STOCK LIST"—Of bolts, nuts and screws, conforming to latest revisions of the Office of Price Administration, and of great value in showing you in what ratio quantities of various standard products are kept in stock for deliveries, by your jobbers and in our own (and other bolt manufacturers') warehouse stocks. *Sent gratis.*

HERE'S A COUPON FOR YOUR CONVENIENCE

THE LAMSON & SESSIONS COMPANY • 1971 West 85th Street • Cleveland 2, Ohio

Please send us ☐ Lamson Blue Book ☐ Bolts, Nuts & Screws ($1.00)
☐ Bolts are Important! ☐ Simplified Stock Sizes

Name of Individual — Title or Kind of Work

Employed by (Name of Company)

Street Address

City and State

No. 1914—Copyright 1944—The Lamson & Sessions Co.

LAMSON & SESSIONS

BOLTS · · NUTS · · COTTERS · · CAP SCREWS · · SPECIALS

Your Jobber Stocks the Lamson Line

Hinge Your Products with Wagner Continuous Hinges

MODERN design calls for Continuous Hinges, which permit flush fitting for improved appearance and security. Wagner has developed special machines and methods for producing Continuous Hinges fast and economically in any metal — any length, width and finish. Engineered to your specific requirements, they can be perforated, counter sunk, formed or spring loaded. You'll find Wagner a *dependable source* for Continuous Hinges of any kind. For your present or future products, we'll work with you confidentially. Write today.

E. R. WAGNER MFG. COMPANY

4617 North 32nd Street • Milwaukee 9, Wisconsin

Since 1899 producers of Metal Stampings and Specialties, Hinges and Hardware, Machine-Applied Hinges, Rolled Butt-Joint Spacers and Bushings.

(*Continued from page 120*)

USES STANDARD UNITS

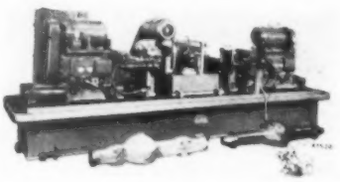
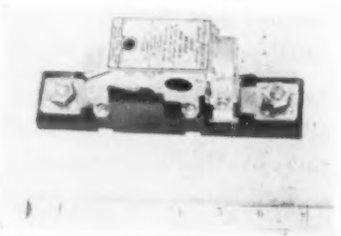


ILLUSTRATION shows how a special-purpose machine which is built of standard units can serve the purpose of two machines by providing for interchangeability of multiple heads and bushing plates. The machine, which is used for drilling two different axle housings, uses three Snyder standard guide-bar type, self-contained hydraulic units. It is said machine has considerable adaptability to other operations. Designed and built by Snyder Tool & Engineering Co., 3400 E. Lafayette, Detroit, Mich.

INDUSTRIAL CHLORINE DIOXIDE AVAILABLE

CHLORINE DIOXIDE, a bleach known to be two and one half times as powerful as chlorine, is now available for industrial purposes by means of a process developed by The Mathieson Alkali Works, 60 E. 42nd St., New York, N. Y. Heretofore use has been impractical because it does not keep and therefore cannot be manufactured in bulk for shipment. New process overcomes this difficulty by providing a safe, practical method by which the user prepares the bleach from chlorine and sodium chlorite at the point and in quantity required.

AIR CIRCUIT BREAKER



NEW d-c, reverse current, air circuit breaker is announced by General Electric Co., Schenectady, N. Y. Designated Type XRP, it is a circuit protective device designed especially for aircraft use and built to satisfy Army Air Forces specifications. Small and compact, rated 400 amperes, 30 volts, with a reverse-current trip setting of 300 amperes and interrupting rating of 8000 amperes at any altitude from sea level to 50,000 ft., the breaker is connected in the generator circuit between the generator relay and the positive box—one being used in the circuit of each generator.

(*Continued on page 126*)

USE THIS FREE-FLOWING ALLOY IN ANY TYPE OF BRAZING

To Eliminate Extra Operations



A portable unit is used here to braze armature leads with tops of commutator riser. In a similar application, one electrical manufacturer saved 3,750 pounds of critically scarce tin on one motor contract by switching from soldering to Phos-Copper brazing . . . and cut costs by more than 75%!

Phos-Copper brazing eliminates extra machining and finishing operations with any type of brazing . . . gas, incandescent carbon, dip, induction heating, or electric furnace . . . for any kind of joint, either butt, scarf, lap or shear.

No flux is needed on most copper brazing, and complicated jigs and fixtures are unnecessary. Very little Phos-Copper is needed to produce a strong, uniform joint, and its low free-flowing temperature (1382° F.) speeds assembly operations.

Nearly every phase of manufacturing, installation or maintenance work can use Phos-Copper at lower cost with better, faster results than expensive silver solders or high-temperature alloys.

Joints of high electrical conductivity are produced with Phos-Copper, and corrosion resistance, uniformity and excellent penetration contribute to its many advantages. Tests have shown Phos-Copper to have greater strength and vibration resistance than 20% silver solder.

Phos-Copper is available now in rod, ribbon and special shapes for immediate delivery. Get complete information on Phos-Copper from your nearest Westinghouse office. Or write Westinghouse Electric & Manufacturing Company, P. O. Box 868, Pittsburgh 30, Pa. J-90544



Brazing generator stator with Phos-Copper, using incandescent carbon method. So little Phos-Copper is needed to produce a strong, uniform joint that extra machining and finishing operations are not necessary.

Westinghouse

PLANTS IN 25 CITIES ... OFFICES EVERYWHERE

Phos-Copper

"Stepped-Up" PRECISION



TWICE ACTUAL SIZE

with CORBIN EXTRAS

This Corbin Special Aircraft Screw (enlarged) is a striking example of how much precision machining can go into so small a part. The two head-drillings cross at the slot. To remove all the burrs from this extremely hard-to-get-at spot requires more machines and more hand-detailing than ordinary machine-shop practice makes available.

At Corbin we perform *all* the operations necessary to produce a better aircraft component. . . . Because here precision problems meet thousands of modern machines plus engineering skill that was developed long before the war.

For flawless accuracy, economy and the "extras" that *can* be added to precision — come to Corbin. PG

Some of our facilities may be available *now*. Send us your blueprints and specifications for prompt, helpful study of your precision requirements.

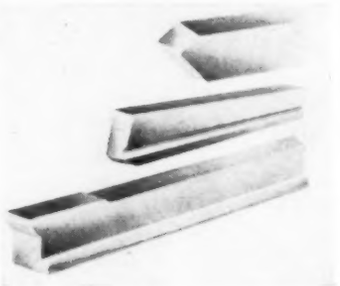
THE CORBIN SCREW CORPORATION
The American Hardware Corporation, Successor
NEW BRITAIN, CONNECTICUT

CORBIN

PRECISION PARTS

(*Continued from page* 124)

BORING & REAMING BLADES

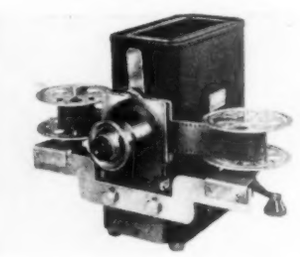


Boring and reaming blades made of Haynes Stellite Cobalt-base alloy are available for Haynes Stellite Co., Kokomo, Ind. They are used for rough-and finish-boring operations on cast iron, malleable iron, brass and bronze, and for rough-and semifinish-boring operations on steel. Reamer blades are chiefly used on cast iron, although they have been successfully used on malleable iron, brass and bronze. They are not recommended for finish-reaming steel. They are available in two grades—98M2 and Star J Metal, the former especially recommended for boring steel. Furnished to users' specifications.

UNICHROME ALKALINE STRIPPING BATH

THIS product is said to eliminate the need for critical chemicals in metal stripping, such as removing copper, chromium, cadmium zinc, tin and other electro-deposited metals from steel and cast iron. Process according to the United Chromium, Inc., 51 E. 42nd St., New York does not etch or pit the base metal, and stripped parts may be used as they come from the bath. If replating is desired no mechanical refinishing is needed. Recommended equipment is simple. Solution is non-toxic and non-corrosive, and does not attack clothing or equipment, nor give off injurious fumes.

READER-PROJECTOR



PORTABLE microfilm reader-projector is announced by the Federal Manufacturing and Engineering Corp., Brooklyn 5, N. Y. Weight 8½ lbs; size 4" (with reel winder-holder - 11") x 8½" x 9½". No special accessories are needed. Standard projection lamps up to 200 watt are used.

(*Continued on page* 128)

"Stepped-Up" FASTENING

with..



CORBIN ACCURACY

Electric power for *speed*. And Corbin "know-how" for the power behind *flawless accuracy* — equally vital to efficient mass fastening.

Corbin Screws are strong, clean, sharp — uniformly correct in every detail of machining and design. They'll drive in squarely and hold firmly — every last one of them. At the business ends of your power-drivers they form an unbeatable combination for quicker, *better* fastening.

Specify accuracy: ask for Corbin and Corbin-Phillips. SNH

Look to CORBIN

for your requirements in Screws and Nuts . . . a full range in both



CORBIN-PHILLIPS and REGULAR SLOTTED



Also AIRCRAFT Screws and Nuts to Governmental specifications.

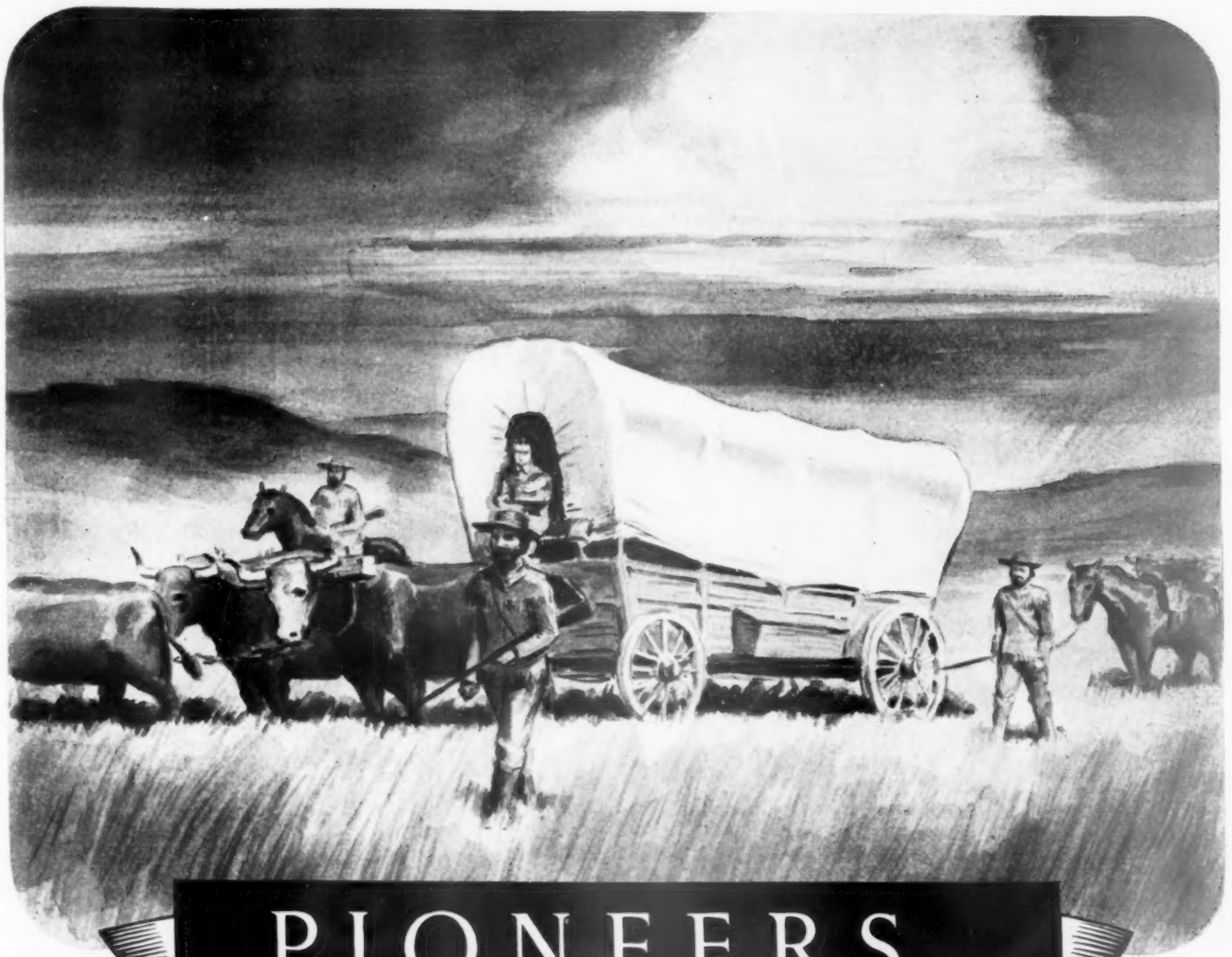
See your Distributor

— also complete stocks at Chicago, New York and New Britain . . . and sales representatives who can "talk shop." Write for Catalog.

THE CORBIN SCREW CORPORATION
The American Hardware Corporation, Successor
NEW BRITAIN, CONNECTICUT
Warehouses:
New York • Chicago

CORBIN

SCREWS



PIONEERS...

We believe we can speak with authority about boxes, because we have been making them for a long time—some ninety years, as a matter of fact... The experience gained through those years is incorporated in the boxes which we offer you today .When you buy SUPERSTRONG boxes, you can be sure that you are getting top value for your shipping dollars. . SUPERSTRONG boxes"—Bound with Steel"—are tough, sturdy wirebound boxes that afford your product fullest protection. They will do the job to your satisfaction.

SHIPPING TRADE SUPERSTRONG MARK CONTAINERS

Our engineering department will be glad to design your shipping containers for greater safety and economy. Contact us without obligation.

RATHBORNE, HAIR AND RIDGWAY COMPANY

Corrugated Box Division: Dearborn Paper Products Co.

1440 W. 21st Place Chicago 8, Illinois

ONE SURE WAY

INSIST ON GRIFFIN

In today's metal cutting, the one sure way for satisfaction is to insist on GRIFFIN BLADES.

There is the Molybdenum High Speed Steel Blades, the most economical cut-off tool on the market today; also High Speed Steel, Soft Center and Soft Back types. The line is complete with the right blade for every job.

Try Griffin. If your distributor cannot furnish, write us.

JOHN H. GRAHAM & CO. INC.

General Sales Agent

105 Duane Street New York City

Made by G. W. GRIFFIN CO., Franklin, N. H.



GRIFFIN

IT SAVES HANDLING

Load parts and products on a Fairbanks Skid-Platform as finished — then roll it away when filled with a Fairbanks Lift-Jack Truck.

That saves one or more handlings. Less frequent handling saves manpower and reduces breakage, resulting in lower costs.

Ask for Booklet J-1.

THE FAIRBANKS COMPANY

393 Lafayette St.,
New York 3, N. Y.

Boston, Mass. Pittsburgh, Pa.

Distributors in Principal Cities



Lift-Jack Truck

Fairbanks PLATFORM, HAND and BOX TRUCKS

★



"Aero-Seal" HOSE CLAMPS

Distinctive worm gear tightening action provides powerful belt-like pull-up. Uniform pressure all around prevents leaks. Can be put on or taken off hose in place on pipe. Can be re-used. No loose parts. Compact design. Extremely long take-up. Made in sizes from ½" up. *Write for circular.*

Proved outstandingly reliable in severe service on aircraft fuel, oil, and coolant lines.

Aircraft Standard Parts Co.

1755-K NINETEENTH AVENUE, ROCKFORD, ILL.

★

(*Continued from page* 126)

DOUBLES MAGNIFYING POWER

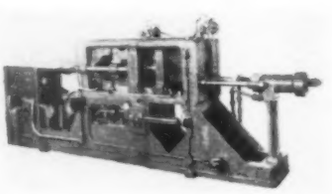


ATTACHMENT for its "Flud-Lite" magnifiers Nos. 701 and 701H, in the form of an auxiliary lens, No. 05 which doubles the magnifying power of the tools, is announced by the Stanley Electric Tools, New Britain, Conn. Use of the auxiliary lens is recommended for close inspection work and assembly of small parts. Lens is 2½" in diameter and is set in a cup-shaped frame. Fits easily under lens frame of magnifier and can be attached or removed in few seconds' time.

PORTABLE POWER GREASE GUN

NEW electric portable power grease gun, Model 7190, is announced by Alemite division, Stewart Warner Corp., Chicago, Ill. The gun has been developed to deliver fast, positive high pressure lubrication with all types of lubricants that seek their own level. Mercury switch automatically shuts off the motor when 5,000 pounds of pressure have been built up in delivery hose. Gun stands 28½" high, 15 in. wide and 26 in. long. Equipment includes one-quarter inch, 20,000 pound burst pressure hose and control valve.

DIE CASTING MACHINES



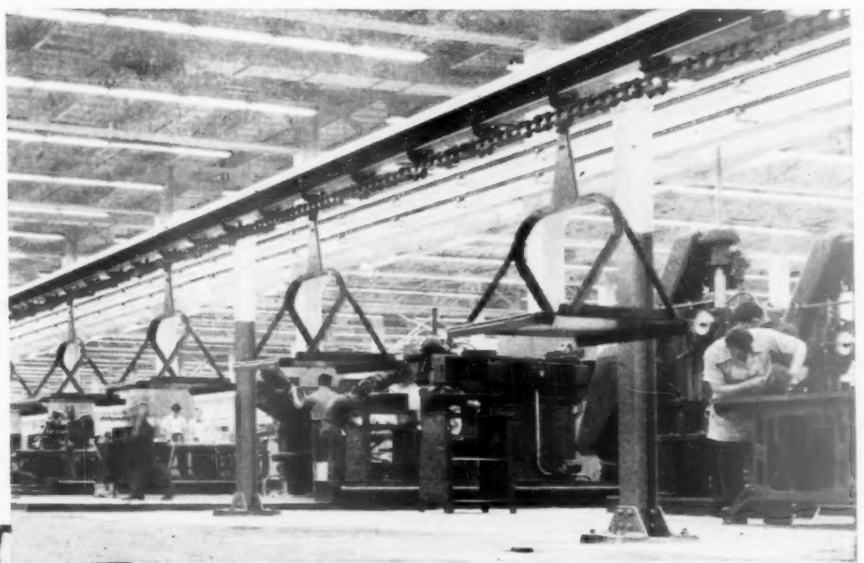
TWO new high-speed, high pressure die casting machines, one for zinc, tin and lead alloys, and the other for aluminum, brass and magnesium alloys (illustrated) are announced by Lester-Phoenix, Inc., 2711 Church Ave., Cleveland, O. Both machines are readily convertible. Zinc machine makes 400 to 500 shots per hour in actual operation. Injection pressures range from 2200 psi for 4-lb. casting to 1400 psi for a 6-lb. casting. Aluminum machine has cold chamber injection system; injection pressures up to 20,000 lbs. psi are available. It produces strong, dense castings which will pass 100% X-ray inspection. Literature available.

(*Continued on page* 130)

Got any Secret Postwar Weapons?



THINKING ABOUT POSTWAR COMPETITION? General Electric Lamp Engineers may be able to help you meet it . . . by showing you (1) how better lighting can improve your plant efficiency and (2) how the use of a G-E Lamp on your product can add to its sales appeal.



1. MAKE IT FASTER. Increased efficiency and lower costs will be the goal of postwar industry. That's why more and more plants are looking to G-E fluorescent lighting for faster production and lower unit production costs. Eyes can see faster, hands can work faster when lighting is improved. Quality of the work goes up, spoilage goes down. Find out what modern lighting can do for you.



2. MAKE IT SELL FASTER. Why not give your product a special, perhaps exclusive, sales advantage by building into it the right General Electric lamp? It may be a lamp for a sewing machine, a vacuum cleaner or an airplane. Or a lamp built into a calculating machine. Or a tiny indicator lamp in an electric iron, radio, range, electronic control, cordset, or in a thousand and one other products. G-E Lamp Engineers will be glad to advise you.

"TO MAKE G-E LAMPS STAY BRIGHTER LONGER"
The Constant Aim of G-E LAMP RESEARCH



IF YOU THINK *G-E Lamp Engineers may be able to help you, get in touch with your nearest G-E Lamp Office or write Div. P-J, A Nela Park, Cleveland, O.*

G-E MAZDA LAMPS

GENERAL ELECTRIC

KEEP BUYING WAR BONDS—
KEEP THE WAR BONDS YOU BUY

Hear the General Electric radio programs: "The G-E All-Girl Orchestra" Sunday, 10 p.m. EWT, NBC; "The World Today" news every weekday, 6:45 p.m. EWT, CBS

Solving the Problem of Burring ALCLAD SHEETS

Once More LEA Technicians Serve Industry



The American Stove Company, Cleveland, is carrying out important war contracts which include fabrication of plane parts from aluminum clad sheets. Upon assuming this contract, a high tempo of production had to be set and kept, but shifting from slow hand to faster machine burring and polishing of these ALCLAD sheets presented some rather tricky problems.

ALCLAD has a delicate film which can easily be damaged, not only when being burred but in the washing afterwards. The resulting polish has to be such that it would not crack in subsequent forming operations. LEA Technicians were called in to advise on proper machine methods and to supply the proper compositions. How well they succeeded is summarized in this way by the management:

> "From the production standpoint, we have gained considerably. The quality of work has been improved to such an extent that resulting scrap has been greatly reduced. We have been able to increase our production schedule."

LEA serves industry by showing how to get faster, more economical, more precise burring, polishing and buffing.

THE LEA MANUFACTURING COMPANY

WATERBURY 86, CONN.

Burring, Buffing and Polishing . . . Manufacturers and Specialists in the Development of Production Methods and Compositions

10-LM-6

(*Continued from page* 128)

SHIMS FOR ADJUSTING TIMKEN BEARINGS

PLASTIC shims for adjusting Timken roller bearings are announced by Industrial Products Suppliers, 2 Broadway, New York, N. Y., who state they are approved for all applications where temperatures do not exceed 175 deg. F. Artus shims for Timken cup adjusted and cone adjusted roller bearings are non-hygroscopic, impervious to oils and greases, and maintain the same even thickness under normal operating conditions.

ACCURATE OPTI-FLAT



NEW opti-flat, a highly accurate optically polished glass master surface plate, flat to an accuracy of 50 millionths of an inch, is announced by George Scherr Co., 200 Lafayette St., New York, N. Y. They are finished to an accuracy of one-half of 1/10,000" giving the toolmaker an extremely accurate surface. Manufacturer says they are extremely resistant to abrasion and are 2" thick for the 12" and 3" thick for the 16" size to prevent warpage and breakage, also, that they are annealed and free from strain and will not distort over a period of time.

DEVICE USES BROKEN DRILLS

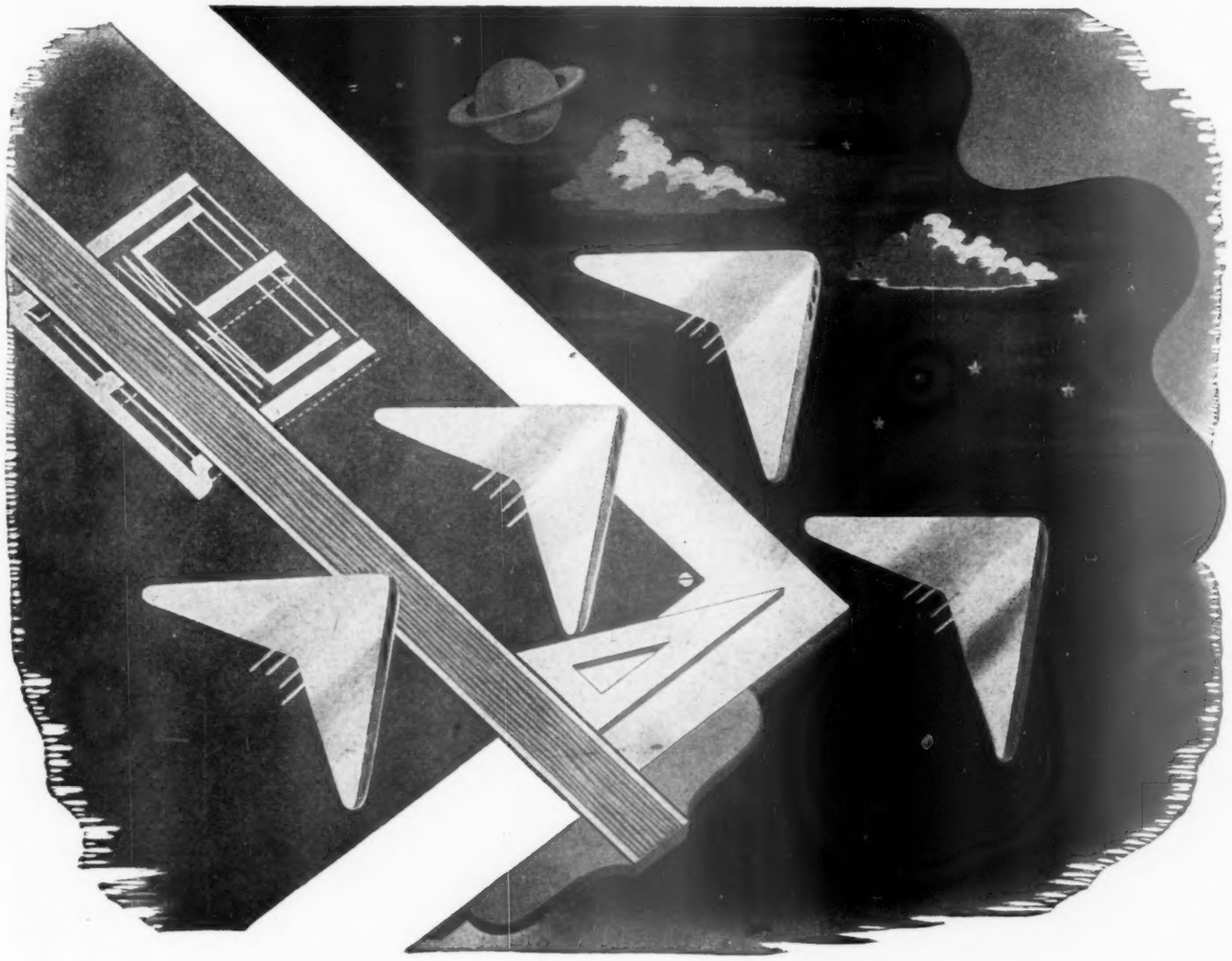
C-B DRILL-SAVER makes possible use of broken drills. Broken end is slipped into device, Drill-Saver chucked up and operator can continue drilling. Slot which compresses when Drill-Saver is in chuck and dimples which ride in drill flutes hold drill firmly. Sold in five sizes to accommodate standard size drills. C-B Tool Compan, 2744 Wabank Rd., Lancaster, Pa.

TWO-WAY-LEAD BALLASTS



NEW two-way-lead ballasts for the operation of Mazda F lamps are announced by General Electric Co., Schenectady, N. Y. They are available in following ratings: Tulamp 30 and 40 watt, standard cross section; Tulamp 40 watt, high voltage; Tulamp 100-watt; Three-lamp 40 watt; and Forlamp 100 watt. The new ballasts are interchangeable with, and serve the same application as, both the superseded leads-out-the-end and leads-out-the-bottom ballasts of the same ratings. They are equally applicable to exposed or enclosed mounting.

(*Continued on page* 132)



FRONTIERS OF THE NEW WORLD

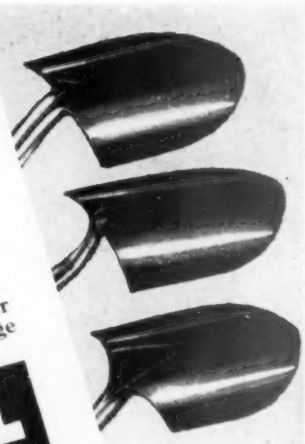
We're in a new world . . . politically and industrially. War, with its veil of military secrecy, has made industrial transition . . . present and impending . . . particularly difficult to appreciate. But it is a fact. For example: product finishing has seen the birth of new bases, new applications and new techniques so startling, so revolutionary, that no business can conceivably remain unaffected. Don't overlook this new world of chemistry in your post-war planning. Our staff of expert finishing engineers will be glad to cooperate with your organization. Your inquiry incurs no obligation. Address The Stanley Chemical Company . . . manufacturers of Stanley Lacquers, Synthetics, Enamels and Japans . . . East Berlin, Connecticut.

Stanley Chemical

Blades CROSS-ROLLED SO Edges WON'T SPLIT

Why not get this Extra Value in Shovels without Extra Cost

If you want to be sure the Shovels you order have Blades made from TEM-CROSS Tillage Steel, be sure to specify . . .



INGERSOLL Shovels

"A Borg-Warner Product"

—on all your orders. Compare performance on the toughest jobs and note the extra service you get from these Shovels with "Blades that are guaranteed Split-Proof."

Distributors: Apply on Form WPB-547 with the Hardware and Small Tools Section of the War Production Board, Washington, D. C., for the necessary Priority Ratings.

INGERSOLL STEEL & DISC DIVISION
BORG-WARNER CORPORATION
NEW CASTLE, INDIANA

Plants: New Castle, Ind.; Chicago, Ill.; Kalamazoo, Mich.

★ All Blade Finishes now Black except Molders' Shovels and Grain Scoops which may be furnished with Polished Face and Brushed Back.

TAPS FOR SHIPMENT FROM STOCK
Subject to prior sale

HY-PRO

"HY-PRO means High Production"

STANDARD HIGH SPEED STEEL HAND TAPS. TAPER, PLUG, OR BOTTOMING POINT

SIZE		PG 01	PG 1	PG 2	Comml Grnd	Cut Thr
1/4-20	2 flute	X		X		
	3 flute		X			
	4 flute	(X)	(X)	(X)	(X)	(X)
1/4-28	2 flute	X	X	X	X	
	3 flute					
	4 flute	(X)	(X)	(X)	(X)	X
5/16-18	2 flute		X			
	3 flute					
	4 flute	(X)	(X)	(X)	(X)	(X)
5/16-24	2 flute					
	3 flute					
	4 flute	X	X	(X)		
3/8-16	3 flute					
	4 flute	(X)	(X)	(X)		
3/8-24	3 flute					
	4 flute	X	X	(X)		
7/16-14	3 flute					
	4 flute	X	(X)	(X)	(X)	
7/16-20	3 flute					
	4 flute	X	X	(X)	(X)	(X)
1/2-13	3 flute					
	4 flute	(X)	(X)	(X)	(X)	(X)
1/2-20	3 flute				X	
	4 flute	(X)	(X)	(X)	(X)	(X)

SIZE		PG 01	PG 1	PG 2	Comml Grnd	Cut Thr
9/16-12	4 flute	X	(X)	(X)	(X)	
9/16-18	4 flute	X	X	X	X	X
5/8 -11	4 flute	X	(X)	(X)	(X)	(X)
5/8 -18	4 flute	X	(X)	(X)	(X)	(X)
11/16-11	4 flute					
11/16-16	4 flute					
3/4						
3/8-6	4 flute	X	X	X	X	X
3/8-12	4 flute					
1 1/2-6	4 flute				X	X
1 1/2-12	4 flute					

Ask to have your name put on our mailing list to receive these lists of HY-PRO Taps for Shipment from Stock

STANDARD HIGH SPEED STEEL HAND TAPS, SPIRAL POINT

SIZE	PG 01	PG 1	PG 2	Comml Grnd	Cut Thr
1/4-20 2 flute	X	(X)	(X)	(X)	
1/4-28 2 flute	(X)	X	X	(X)	
5/16-18 2 flute	(X)	(X)	X	X	X
5/16-24 2 flute	X	X	(X)	(X)	X
3/8-16 3 flute	X	(X)	(X)	(X)	X
3/8-24 3 flute	X	X	X	X	X

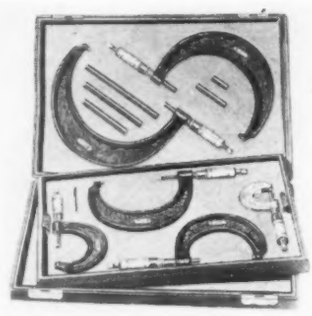
SIZE	PG 01	PG 1	PG 2	Comml Grnd	Cut Thr
7/16-14 3 flute	X	(X)	(X)	(X)	
7/16-20 3 flute	X	X	(X)	(X)	X
1/2-13 3 flute	X	X	X	X	
1/2-20 3 flute	X	(X)	(X)	(X)	

X - Less than 100 pcs. (X) - More than 100 pcs.

HY-PRO TOOL CO.
New Bedford, Mass., U.S.A.
BUY MORE BONDS-GET IN THE SCRAP

(Continued from page 130)

CERTIFIED MICROMETERS



NEW line of Certified Accuracy Micrometers is announced by the Central Tool Co., Auburn, R. I. It includes black enamel finished forged steel micrometers from one to six inches. Forged steel polished frame micrometers with decimal equivalents are available in the one and two inch sizes. Company also has available micrometers with ratchet stop, lock nut and 10,000ths graduations as well as full range of metric micrometers. Catalog No. 14 describes its products.

TREATMENT FOR CEMENT FLOORS

SYNKRETE Concentrate is the name of new highly concentrated treatment for cement floors, etc., which is said to provide coverage for at least 1000 square feet per gallon, announced by Synthex Products Co., 2 West 45th St., New York, N. Y. It is diluted with three parts water before use, and is easily applied by mop, brush, long handled broom or sprinkler. Liquid is almost colorless and does not affect appearance of floors. Manufacturer states it may be used for sizing floors before painting.

RECHARGEABLE FLASHLIGHT BATTERY



RECHARGEABLE wet flashlight battery for industrial use built on the principle of the automobile wet storage battery, is announced by the B. F. Goodrich Co., Akron, Ohio. It is said to be especially valuable for operations where long continued usage of flashlights is necessary. They give same light as industrial type dry cells. Freshly charged wet battery will give about 3 hours of constant light. Can be used in standard three or five cell dry battery case. Battery requires special type Mazda lamp which comes in 1.9 volt; .6 ampere. Recharging equipment available.

(Continued on page 134)



THERE was a time when a wire coat hanger was just a handy gadget to hang clothes on. You took 'em for granted. Dozens accumulated in every closet. Tailors and dry cleaners included them free with every suit that came back from a pressing. But not anymore.

It's an interesting fact that coat hangers, like bobby pins, fly swatters and paper clips, have become so hard to get lately. Their growing scarcity has made people realize how indispensable to modern living are the many commonplace products that are best when made of steel wire. They've been sorely missed on the home front. They're due for a big welcome when wire comes back from the wars.

Manufacturers Wire has been improved by War Service

We've learned a lot about making wire better during these war years. We know how to turn it out faster and in greater quantities. New and better steels have been developed to give wire even greater versatility. To make it more ductile, stronger, stiffer —easier to fabricate.

All this means that as more wire is released for civilian manufacturing you'll find American Quality Wire better able than ever before to do a better job for you.

Right now is not too soon to plan to include this superior wire in your products of tomorrow. Our wire specialists and product research men have accumulated a lot of good ideas that you may find very helpful. Their cooperation is at your service.

AMERICAN STEEL & WIRE COMPANY

Cleveland, Chicago and New York

Columbia Steel Company, San Francisco, *Pacific Coast Distributors*

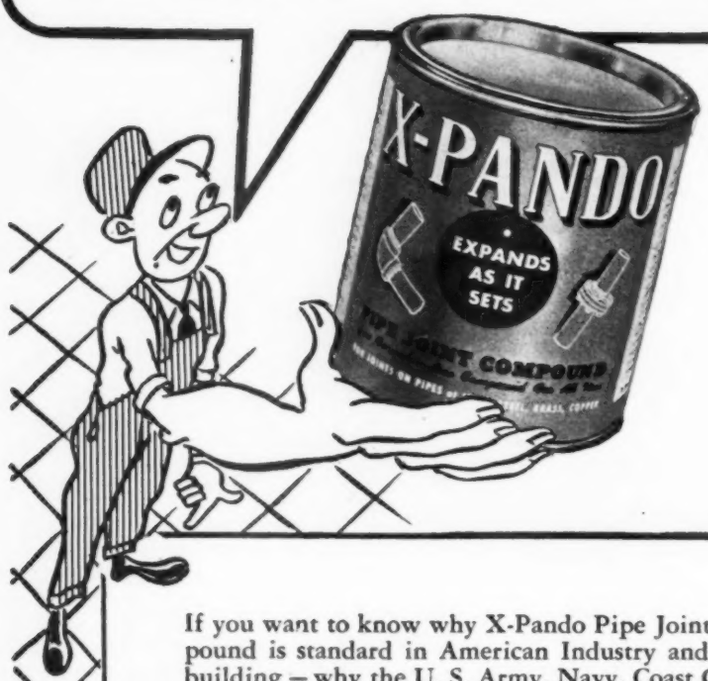
United States Steel Export Company, New York

USS

AMERICAN *Quality* MANUFACTURERS WIRES

UNITED STATES STEEL

Brother, when You Seal a Joint with X-PANDO You know it won't leak!



If you want to know why X-Pando Pipe Joint Compound is standard in American Industry and Shipbuilding – why the U. S. Army, Navy, Coast Guard, Maritime Commission and Army Air Corps use it – why the pipe shop men who take no chances *insist* on X-Pando, here are the reasons.

It expands as it sets

THE ONE FORMULA – FOR ALL USES!

X-Pando corrects imperfections in threads and flanged faces. It's economical, goes 6 times further. Holds anything carried in metal pipe except certain heavy acids – expands and contracts with pipe movement – yet joints may be easily taken apart – smoothes flange faces – X-Pando withstands deflection, sharp temperature changes–vibration and pressures–better than litharge and glycerine for all uses. More than a pipe joint compound. It is an all purpose industrial sealing agent.

If you want to End Leaks Permanently specify X-Pando – the best – costs less

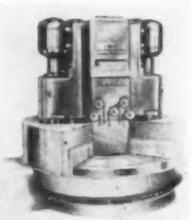
Distributors Everywhere

X-PANDO CORPORATION

43-15 36th St. · L. I. City, N. Y. · STillwell 4-7180

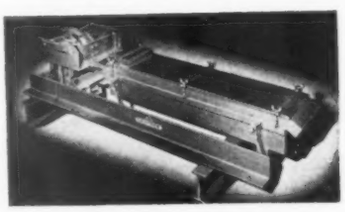
(*Continued from page* 132)

ROTARY SURFACE GRINDER



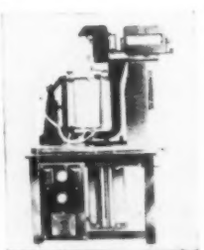
GREATER GRINDING capacity and wider utility are claimed for new five-spindle surface grinder, the No. 100, introduced by Hanchett Mfg. Co., Big Rapids, Mich. It has T-slotted work table 100" in diameter by 20" in width, and is driven by P.I.V. variable speed unit by 5 HP 1200 RPM motor. Each of its five grinding wheel heads embodies a 40 HP, 900 RPM motor. Each wheel head has automatic sizing device which automatically compensates for wheel wear and operates in increments of .0002". There is a wheel dresser for each wheel head. In test on cast iron cylinder blocks, the machine removed stock at the rate of 8 cu. in. per minute.

SHOT RECLAIMER



STANDARDIZED shot reclaiming screen is announced by the Aja Flexible Coupling Co., Westfield, N. Y., for separating shot into coarse and fine grades for cleaning operations in centrifugal and compressed air blast machines. It is said to speed up blasting of heavy work by screening out the fines, thus eliminating cushioning action. All rotating parts are completely enclosed and run in oil assuring long life under abrasive conditions encountered in foundries.

DIRECT-READING DILATOMETER



DIRECT - reading Dilatometer records temperature dilation changes and temperature - time changes simultaneously in ink during heating and cooling cycles of ferrous and nonferrous metals, ceramics and other materials. Two records are made on chart with rectangular coordinates for ease of interpretation and filing. Inside dimensions allow use of any size or shape of sample up to 1⅝" diam by 5" long. Can be used also to determine critical points of carbon steel, coefficients of expansion of metals, thermal composition of steels, heating rates and heat saturation. Bulletin W1803 available from Bristol Co., Waterbury 91, Conn.

(*Continued on page* 138)

2-WAY-LEAD BALLAST FITS ANY FIXTURE

NEW

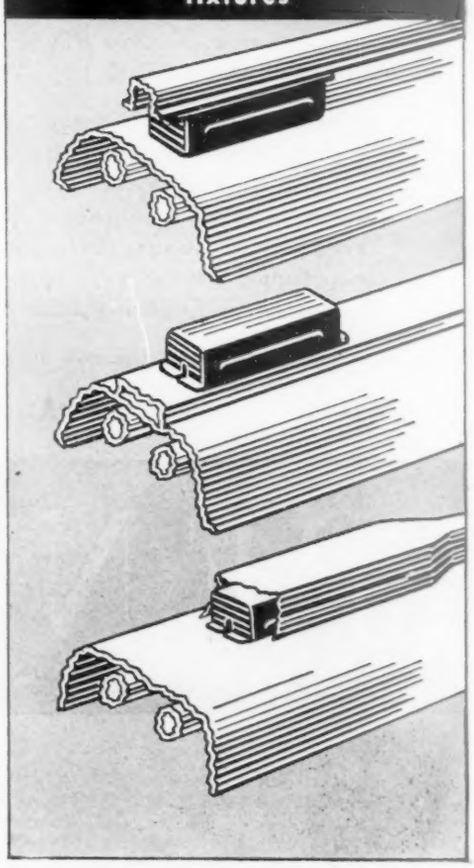


ANGLE SLOT
lets the leads out at ends or bottom

•

Eliminates need for two case styles in each rating

FOR EXPOSED OR ENCLOSED MOUNTING
on commercial or industrial fixtures



Ratings: 30-, 40-, and 100-watt Tulamp; 40-watt three lamp; 100-watt Forlamp; 40-watt, h-v Tulamp

THIS new ballast has all the mounting and application features of ballasts with leads out the end and ballasts with leads out the bottom. It can be applied (without fixture design changes) to present fluorescent-lighting fixtures, whether designed originally for either of the above types of ballast. (See three typical examples at right.)

Reduces ballast inventory: Because this new two-way-lead ballast is so universally applicable (permitting fixture manufacturers to meet diversified demands), it is necessary to stock only this one case style in the ratings for which it is designed. Thus, your stock inventories can be cut, and valuable warehouse space released.

Complete interchangeability: Provision has been retained for either center or corner-hole mounting, and all dimensions and electrical characteristics are identical to those of the ratings that are superseded, making this new ballast interchangeable in every respect with the superseded ratings. Ask for Supplement 3 to GEA-3293E. *General Electric, Schenectady 5, N. Y.*

BALLASTS FOR FLUORESCENT LIGHTING

GENERAL ELECTRIC

408-24-5205

A pioneer producer of

GRINDING WHEELS

makes a promise to industry

THE WIDE and ever-growing industrial acceptance of Peninsular Grinding Wheels can be measured by the fact that today more than 50 diversified fields are represented among the hundreds of manufacturers who depend wholly or partially on Peninsular.

True to a tradition that dates back to 1889, Peninsular has kept pace with every new development in the engineering, manufacture and application of grinding wheels — and in addition, Peninsular has pioneered many new and valuable contributions, both in abrasive wheels and in the machinery for their manufacture.

Today, as America stands on the threshold of reconversion to civilian production, Peninsular renews its promise to industry—to build only to the highest standards of quality and engineering excellence.

A STANDING INVITATION

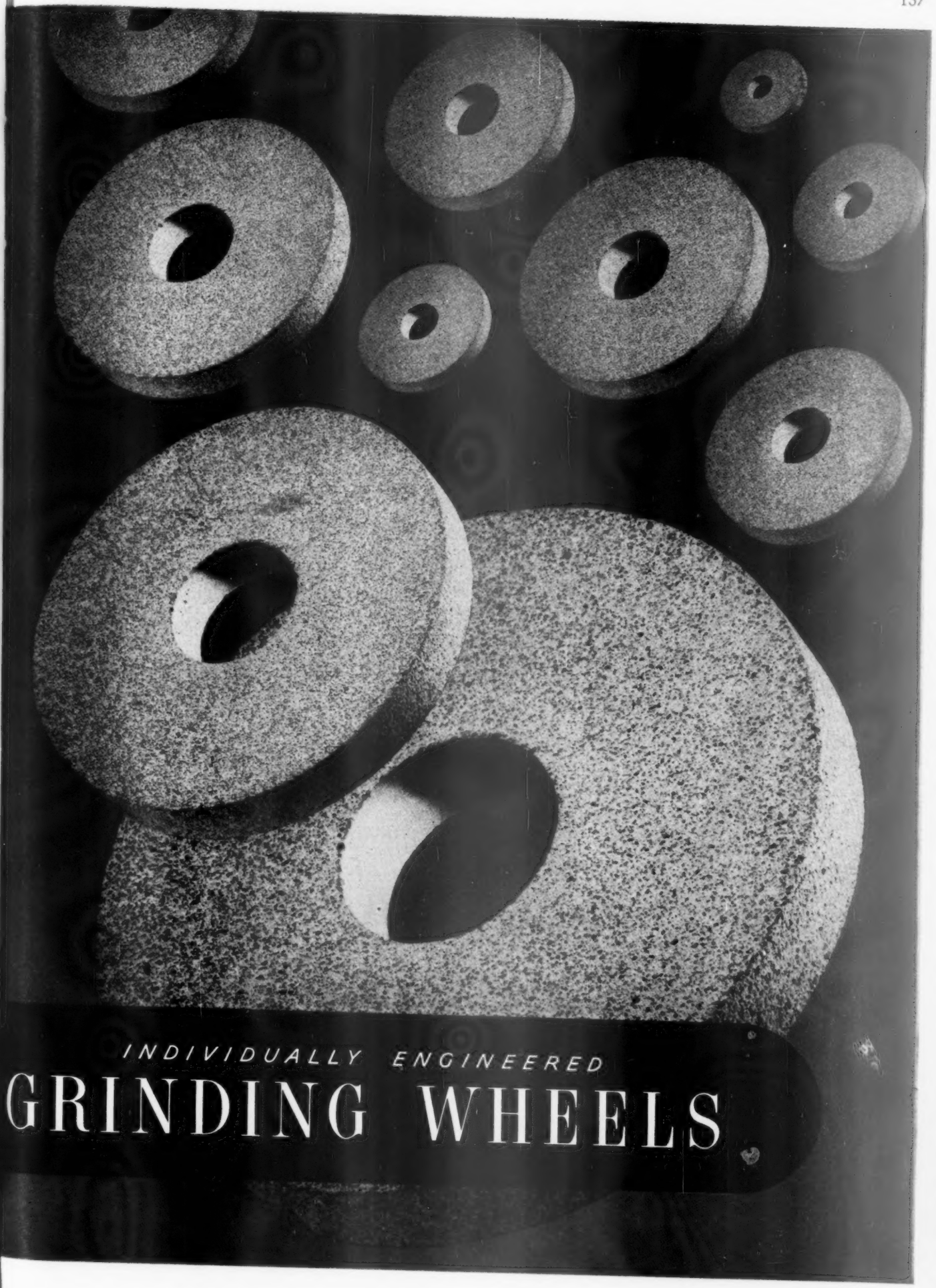
Our expert staff of factory and field engineers are ready today to help in your postwar preparation—with a production, engineering and cost analysis service beyond any offered up to now in the industry.

The Peninsular Grinding Wheel Company, 729 Meldrum Ave., Detroit 7, Michigan. *Branch Offices:* Chicago, Cleveland, Newark, Pittsburgh.

SPECIALISTS IN RESINOID BONDED WHEELS

PENINSULAR

SINCE 1889


INDIVIDUALLY ENGINEERED
GRINDING WHEELS

The POLAN BORESCOPE for VISUAL INSPECTION of INTERNAL SURFACES



Unretouched photo showing crack in gun barrel.

For work in which the inspection of internal surfaces is a factor, Polan Borescopes give detailed, minute inspection.

Requiring no special operator training, Polan Borescopes are practical in usage. Designed for inspection of gun bores, bored engine shafts, cylinders, etc., with absence of eye fatigue. Efficient inspection of bore diameters ranging from 20mm to 9 inches; lengths up to 30 feet.

AWARDED TO ZENITH OPTICAL CO. a unit of . . .

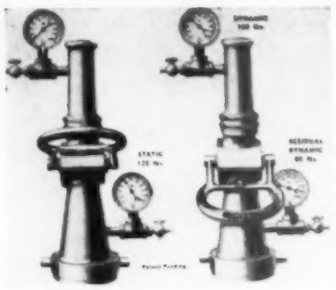
Polan Industries

Write today for your copy of Borescope Bulletin No. 509.

HUNTINGTON 19 • WEST VA.

(Continued from page 134)

MEASURING WATER PRESSURE

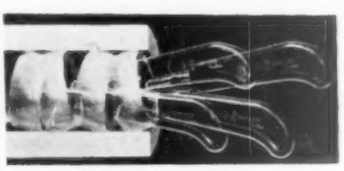


TOOL named the Dyna-Stat Hydrostatic-Dynamic Pressure Test Pipe for recording water pressure in pipe lines, hydrants, faucets and pumpers, etc., is announced by Vulco Products Co., 409 W. 36th St., New York. It is said to immediately detect any ratio between static and dynamic pressures not within an acceptable range. The Dyna-Stat test pipes are made in five sizes for testing tydrants and pumpers of various capacities. Illustration shows approximately correct ratio between static and dynamic pressures on a test using 1⅛" outlet tip (.9940 sq. in.) at 120 lbs.

RULE DETERMINES MACHINE SPEED

VEST pocket plastic slide rule, developed by practical shop man, which determines instantly the correct machine speeds for all metal cutting operations, is announced by Grove Calculator Co., 6644 Cottage Grove Ave., Chicago, Ill. Used by machinists, foremen, etc., to select most efficient cutting speeds for both high speed and carbine machining operations. Readings from 10 F.P.M. to 1000 F.P.M. can be obtained.

TEBO GAGE

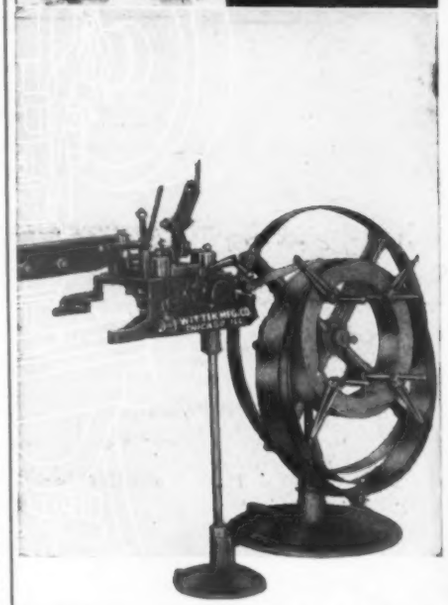


PRODUCTION of improved TeBo gage is announced by the Standard Gage Co., Poughkeepsie, N. Y. Illustration is phantom view of gage at different positions in a bore showing how every section of a bore can be checked readily with this fixed limit type gage. Gaging head is a section of a sphere with a protective plating of hard chromium. Spherical head offers gaging contacts as numerous as the theoretically widthless lines which might be inscribed on a sphere. Special head contributes to frictionless operation and effortless insertion and withdrawal of head when checking bores, eliminating possibility of gage becoming jammed. It is claimed that in mass production 60% of gaging time may be saved by use of TeBo gage. Printed matter available.

(Continued on page 140)

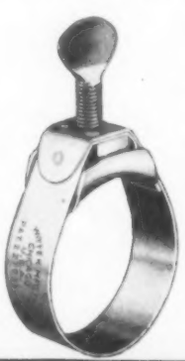


Our Punch Presses Are More Flexible And Productive With WITTEK *Automatic* Roll Feeds And Reel Stands



Manufacturers of metal stampings facing problems in the feeding of coiled strip stock to punch presses will find that Wittek Automatic Roll Feeds and Reel Stands conserve man-hours and achieve new high production levels.

Providing an improved and simplified method of punch press operation, Wittek Automatic Roll Feeds and Reel Stands insure rapid, safe and accurate feeding under all conditions. Made in four different types to meet all automatic feeding requirements. Write for complete details. Wittek Manufacturing Co., 4305-15 West 24th Place, Chicago, Ill.



Wittek Hose Clamps for over twenty years identified with the Automotive and Aviation industries, are noted for their permanent leakproof hose connections. For original equipment and replacement.

WITTEK MANUFACTURING CO. 4305-15 W. 24th Pl., Chicago



IF the Empire State Building didn't go UP . . .

IF reduced to one story, the Empire State Building would cover 85 acres of land! No longer a compact unit, it would become a sprawling, inefficient structure . . . traffic would be hopelessly confused, while rent, fuel and maintenance bills would run into millions.

A ridiculous supposition? Possibly. Yet much of our present-day storage violates the simple truth brought out by this example. Materials stored in a single tier reduce production space, promote congestion and encourage higher expenses.

How easy to remedy the situation with a Barrett Portable Elevator! Then the ceiling's the limit—no waste space remains. Fast, too, for with a Barrett one man does the work of three or four.

Why not investigate the Barrett Portable Elevator? It will save not space alone, but time and money as well. Complete information is waiting for you—without cost or obligation.

BARRETT-CRAVENS COMPANY

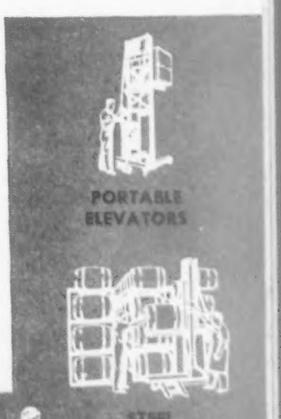
3280 West 30th Street • Chicago 23, Illinois

Representatives in All Principal Cities

Canadian Licensee: S. A. Armstrong, Ltd., Toronto, Canada



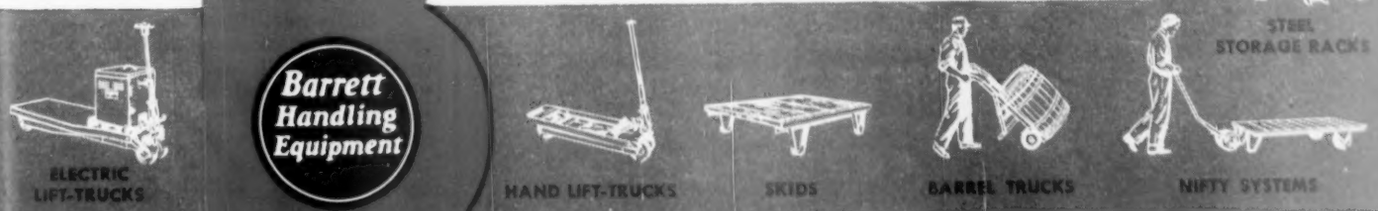
Send a postcard for your free copy of the Barrett Junior Catalog.



BARRETT

ONE MAN DOES MORE THAN 3 OR 4 . . . WITH A BARRETT PORTABLE ELEVATOR

Barrett Handling Equipment





"SWORDS INTO PLOWSHARES"

The day is near when we shall put aside at least a part of our arms and turn our production skills to articles of peace. The hard-learned lessons of war taught us production aids which saved precious time and cut down costly errors.

High on the roster stands "FILMONIZE" Self-Sealing Tape. It has sealed precious blood plasma against moisture penetration and contamination. It has labeled intricate parts of assemblies, to expedite factory production and battlefield repair. "FILMONIZE" Self-Sealing Tapes have performed a multitude of such functions well.

It will be ready for reconversion. Those same "FILMONIZE" Self-Sealing Tapes will be used for colorful sealing of your *new* packages without water. They will be used to simplify *new* production problems that will be met by *new* men. The "FILMONIZE" Colored Tape signals, the "FILMONIZE" numeral and lettered tapes will speed output and reduce error in many operations.



Ask your distributor how to fit "FILMONIZE" Tape into your reconversion plans.

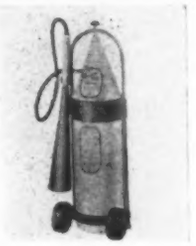
filmonize
TRADE MARK REG.
SELF-SEALING TAPES

Address all inquiries to Dept. 38

INTERNATIONAL PLASTIC CORPORATION
MORRISTOWN • NEW JERSEY

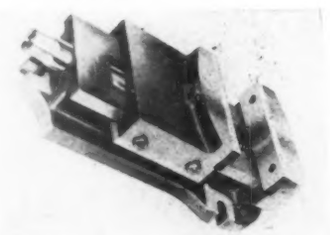
(*Continued from page* 138)

25 LB CO2 FIRE EXTINGUISHER



TWENTY - five pound wheel-type carbon dioxide fire extinquisher that is moved and operated with uninterrupted, single-sweep action, is announced by Randolph Laboratories, 8 E. Kinzie St., Chicago, Ill. Unit features palm-trigger valve on handle. Operator can move the unit and press release button with one hand, discharging a penetrating blanket of carbon diovide in 10 to 20 ft. arc. Mounted on hard-rubber wheels, the unit is self-balanced, standing or in operation. It is especially recommended for protection against gasoline, oil, paint, grease, machine, electric and surface fires.

ROUSSELLE VICTORY VISES



FOUR new heavy stationary vises are announced by David J. Ross Co., Benton Harbor, Mich. They are made in four sizes—4½", 7", 10" and 13". Cleanout hole in base of stationary jaw allows chips and waste accumulations to be easily removed. Vises were designed to meet wartime production demands for heavy, accurate vises to hold work during milling, grinding, cutting and similar operations.

1/125 UP TO 1/25 HP



NEW shaded pole totally enclosed motor for power requirements of 1/125 up to 1/25 HP, incorporating pressure - locked, resilient, rubber mounting, is announced by A. G. Redmond Co., Owosso, Mich. It is known as the type "T" micromotor. Base mounted models utilize rubber mounting providing quiet operation. Small overall size motor is made possible by air-stream cooling system using enclosed fins and fam. Frame is of three-piece die-cast design. Special voltages, frequencies, leads, finishes and shaft extensions available.

(*Continued on page* 142)

Every part

—even to the smallest bolt making up the

CHESTER

Chain Hoist

has been

carefully and scientifically engineered

into a Masterpiece of Hoist Construction

It pays to use and handle

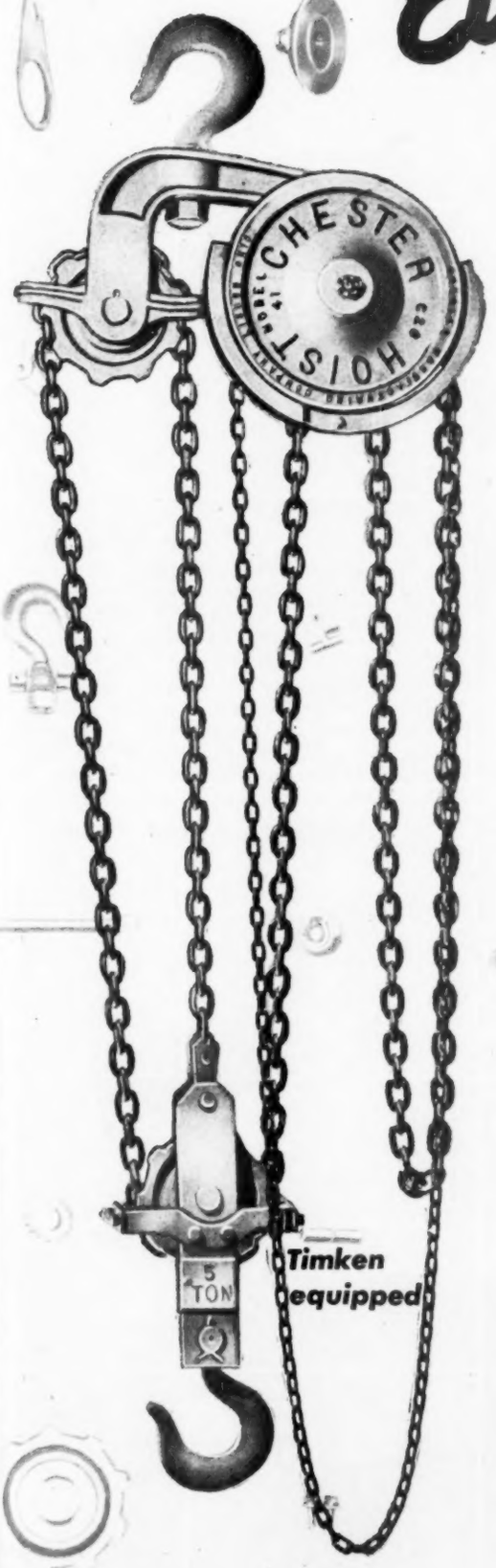
The Hoist made for the Tough as well as the Particular Jobs.

Buy – The Chester Chain Hoist

The Hoist of today – Yesterday and Tomorrow

It has passed the Test of Time as well as the rigid requirements of Uncle Sam.

A complete line ½ to 40 tons
Send for latest literature



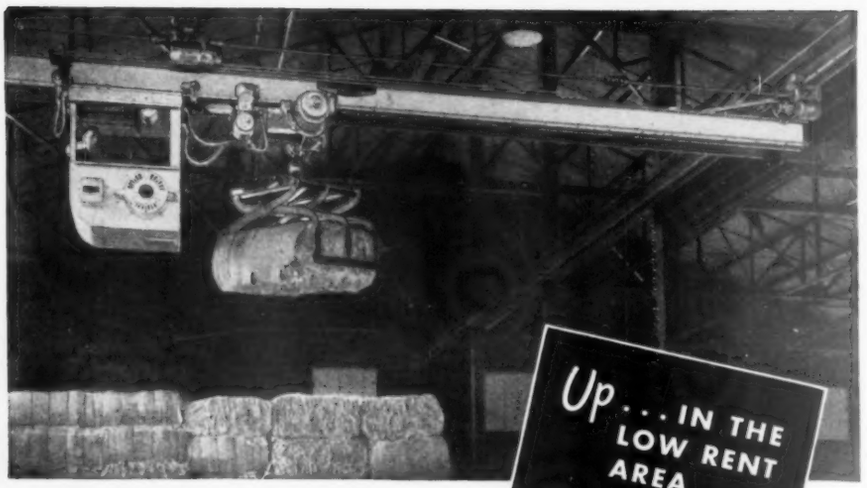
Timken equipped

Timken equipped

CHESTER

MANUFACTURING COMPANY

LISBON, OHIO



monorail hoists

YOU SHOULD KNOW MORE ABOUT SHEPARD NILES CAB-OPERATED MONORAILS

1. HOIST MOUNTING — The hoisting unit is mounted parallel to the runway, if side pulling at right angles to the runway is likely to occur—or, where the load hook must operate close to the end of the runway, the hoist can be mounted at right angles to the runway.
2. TROLLEY DRIVE UNITS —Monorails are provided with either one or two trolley drive units, depending upon the travel-speed required along the runway.
3. FULLY ENCLOSED OPERATING PARTS—All operating parts of the hoisting unit are fully enclosed and completely protected from moisture and dust.
4. BALANCED DRIVE—Stresses are evenly distributed in the hoisting unit through the use of the Shepard "Balanced Drive".
5. LUBRICATION—Entire gear train operates in a bath of oil.
6. BEARINGS — Antifriction bearings used throughout.
7. OPERATOR'S CAB supplied either open or completely enclosed and weatherproofed for outdoor service.

deliver the goods . . . quickly, economically . . . day after day

Up, out of the way of important production, Shepard Niles Cab-operated Monorail Hoists go places—and get things done.

They are especially recommended for long runways, where rapid travel speeds are required.

When operated on the single beam of a Transfer Crane, complete areas are covered quickly, completely and continuously.

When operated in conjunction with a transfer crane, which permits the hoist to serve adjacent bays through a system of overhead switches and spurs, a Cab-operated Monorail achieves its greatest efficiency. No spot, indoors or out is so inaccessible that it cannot readily be serviced with a Monorail.

Qualified Shepard Niles sales engineers are located in all war-production centers to consult with you in determining the exact type of equipment you will need to obtain maximum efficiency in your materials-handling operations.

SHEPARD NILES MAINTENANCE MANUAL — FREE. 106 pages, amply illustrated by line and sectional drawings.

A COMPLETE LINE OF CRANES & HOISTS

Shepard Niles
CRANE & HOIST CORPORATION
462 SCHUYLER AVE. • MONTOUR FALLS, N. Y.

(*Continued from page* 140)

POSITIVE TORQUE CONTROL



IMPACT screw drivers and nut setters with positive torque control are announced by Aro Equipment Corp., Bryan, Ohio. Torque regulator in handle allows operator to easily regulate the torque. Model 1011 screw driver has aluminum handle and housing, weighs 2 lbs. 2 oz., and is 7″ overall in length. It will accommodate Phillips, Reed and Prince or standard chisel point bits and finders for slotted screws. Model 1012 nut setter has aluminum handle and housing, weighs 2 lbs. 2 oz., with 7″ overall length. Available with 9/32″ or 3/8″ square driver adapter. Either can be furnished with plastic handle and housing, reducing weight to 1 lb. 13 oz.

FAST DRYING RUST PREVENTIVE

RUST preventive coating for protection of metal parts and equipment during storage, shipment, etc., has been developed by Witco Chemical Co., 295 Madison Ave., New York, N. Y. It is known as Witco #673 Rust Inhibitor. It is a cold-dip, rapid drying coating that may be applied by dipping or spraying. It conforms to Ordnance Specifications AXS-671, Rev. 1, Amend. II. It is non-abrasive, non-corrosive, easily removed with ordinary solvents. Melting point is in excess of 250 deg. F.

HARDENING & QUENCH TABLE



GENERAL-purpose two-station hardening and quench table for use in connection with high frequency induction heating generators and suited to a wide variety of machine parts requiring surface hardening or localized heating, is announced by Induction Heating Corp., 389 Lafayette St., New York, N. Y. It is arranged with quick change coil connections. It can be used either as a single purpose unit, using two identical fixtures, or it will serve as a general purpose table for various kinds of hardening operations even where the lots may run as low as 6 or 12 pieces. Unit is furnished for cover plate for the sink.

Bassick's Position Lock



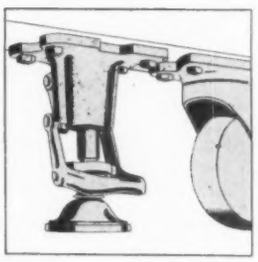
May Be Your Answer to "CAN I MAKE OUR PRODUCTS PORTABLE?"

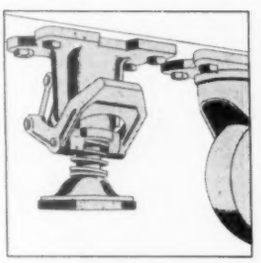
Mobility may be the idea you are searching for to improve your products or give your new products an extra plus. So investigate the possibilities of making them portable with Bassick Casters and Bassick Position Locks. This combination will answer the objection to portable equipment that can't be locked securely in place.

Bassick Position Locks
Hold Portable Equipment in Place, Locked Against Movement

EASY TO INSTALL

Bassick Position Locks are available in various sizes and heights to fit most portable equipment . . . even equipment on angle floor tracks. Flat top mounting plate attached the same as casters.



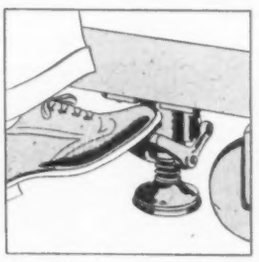


OUT OF THE WAY

The lock is designed to be applied underneath the equipment, out of the way, protected from damage ...yet always readily accessible for operation — locked and released from normal standing position.

EASY TO OPERATE

A light downward pressure on the foot lever sets the "shoe" in contact with the floor. A slight upward pressure by the toe, under the foot lever, releases the lock.





POSITIVE BRAKING ACTION

Almost 12 square inches of friction locking surface, held by heavy spring pressure in contact with floor. Flexible joint keeps the base in full contact with the floor.

Bassick developments in casters and locks have given wings to war production. Their success promises to be the source of inspiration for designers of post-war equipment in many fields.

If making your product portable will increase its utility and saleability . . . get in touch with Bassick, world's largest manufacturer of casters. Call in Bassick engineers to help you with your problem. Write for compiete details on casters and position locks to



MAKING MORE KINDS OF CASTERS
. . . MAKING CASTERS DO MORE

Bassick

THE BASSICK COMPANY
BRIDGEPORT 2, CONNECTICUT
Division of Stewart-Warner Corporation, Chicago, Ill.
Canadian Factory: Stewart-Warner-Alemite Corporation of Canada, Ltd.
Belleville, Ont.



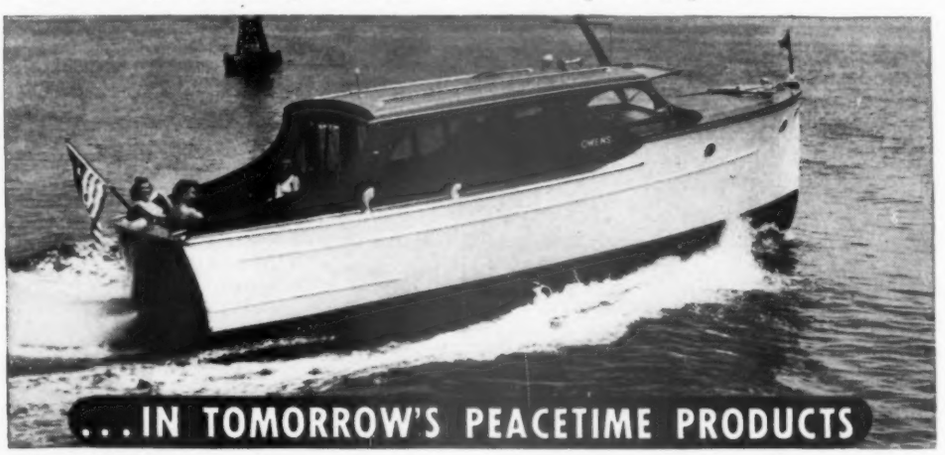
AMERICAN *Phillips* SCREWS

for Top Speed and Lowest Cost of Assembly



...IN TODAY'S WAR EQUIPMENT

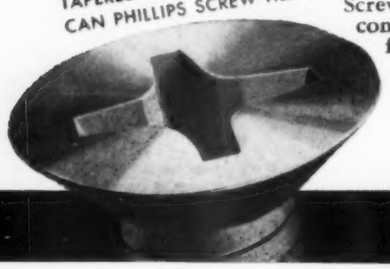
In the U.S. Army crash boats (shown above) and landing barges built by the Owens Yacht Company of Baltimore, American Phillips Screws are used to make *speedier, stronger fastenings* . . . to get these vitally needed craft into service quicker, and to make sure they will stand up to the strenuous service required. Owens workers, using power drivers, make clean and flush fastenings right down the line, with American Phillips Screws. No fumbling starts, no crooked driving, no gouged work-surfaces, no split screw-heads. This is typical American Phillips Screw performance.



...IN TOMORROW'S PEACETIME PRODUCTS

Owens Yacht Company's peacetime pleasure craft, like their present-day war craft, will feature sturdy, ship-shape fastenings made by power-driven American Phillips Screws. In fact, the matchless speed and controlled accuracy of American Phillips fastenings will help this well-known boat builder to meet the pent-up, urgent demand for his quality product . . . and still maintain his rock-bottom cost per fastening. In fact, in all fields of peacetime production, the production advantages of American Phillips Screwdriving will continue to be just as important as they were in meeting wartime delivery schedules . . . on time and with the inspector's OK.

4-WINGED DRIVER CAN'T TWIST OUT OF ENGINEERED TAPERED RECESS IN AMERICAN PHILLIPS SCREW HEAD



AMERICAN SCREW COMPANY

PROVIDENCE 1, RHODE ISLAND

Chicago 11: 589 E. Illinois Street *Detroit 2:* 502 Stephenson Building

Put the Screws on the enemy...BUY BONDS!



Rough forging, before machining, of towing shackle of Rustless 16-2 stainless steel (Chromium 15-17%, Nickel 1.25-2.50%, Carbon .20% max.), the alloy whose strength, impact and corrosion resistance and favorable strength-weight ratio make it especially valuable in marine and in other exacting services.

IT HAS BEEN SAID that 16-2 stainless steel (Type 431) was forgotten in this country, but Rustless did not neglect it. On the contrary, we learned how to handle it, have produced many thousands of tons of it successfully, and have helped our customers learn how to work it.

This grade is unusually tough in the hardened and stress-relieved condition. In that condition, it has an ultimate tensile strength of 175,000 PSI min.; yield strength, 135,000 PSI min.; elongation in 2", 13% min.; and a minimum Izod impact strength of 35 ft. lbs. It has excellent resistance to certain types of corrosion, especially salt spray, tap water, steam and food products including fruit juices. In fact, 16-2 has the best corrosion resistance of any stainless steel hardenable by heat treatment. This gives it a definite advantage over the more customary 18-8 alloy for parts of such large section that cold working is impractical.

Rustless knows how to produce sound ingots and perfect bar, rod and wire of 16-2. Equally important, we have solved the once-vexing problem of heat treatment, so that the desired characteristics can be obtained in any shop with accuracy and uniformity. Data and instructions are available on request, on this and other stainless steels.

Write for new booklet, just off the press: "Heat Treatment of Stainless Steels." . . . Rustless Iron and Steel Corporation, Baltimore 13, Maryland.

RUSTLESS

Producing STAINLESS STEELS *Exclusively*

SALES OFFICES: BALTIMORE • BUFFALO • CHICAGO • CINCINNATI • CLEVELAND
DETROIT • LOS ANGELES • MILWAUKEE • NEW YORK • PHILADELPHIA • PITTSBURGH • ST. LOUIS
DISTRIBUTORS IN PRINCIPAL CITIES

CM METEOR

Here is the Subtractor of Materials Handling Costs



CM Bulletin 142 illustrates and describes every operating feature that makes the CM Meteor Heavy Duty Electric Hoist an outstanding production time-saver . . . cutting deep into materials handling costs. Helical gears, aeroplane cooling, low headroom, safety limit brake, simplified maintenance . . . these and other advantages are explained in terms of operating efficiency and service life. Various types trolleys and accessory equipment, lift and speed tables, dimensions, etc., are included.

We invite you to write today. Just ask for Bulletin 142.

Capacities from ½ ton and up. Lifting speeds from 18 to 60 feet per minute . . . Low headroom. Hook suspension, plain, geared or motor driven trolley.

CHISHOLM-MOORE HOIST CORPORATION

(Affiliated with Columbus-McKinnon Chain Corporation)

GENERAL OFFICES AND FACTORIES: 136 Fremont Ave., TONAWANDA, N. Y.

SALES OFFICES: New York, Chicago and Cleveland

WPB-OPA DIGEST

Tire Shortage—ODT—With many trucks and buses down all over the country, severe shortage of heavy-duty truck and bus tires for replacement purposes will continue through fourth quarter of 1944 and a spread of the tire shortage to smaller size truck tires is in prospect, according to Col. J. Monroe Johnson, ODT director.

Unused Employees Shoes—OPA—Employers and institutions may apply for permission to sell shoes which they bought to furnish to their personnel but which are no longer being used for that purpose. Amendment 75 to Ration Order 17.

Ammunition for Hunters—WPB—Because animals and birds are causing destruction to crops and livestock, the WPB is planning to remove temporarily the ban on the sale of ammunition to hunters.

Re-examine Stockpiles, Purchases—WPB—Division directors have been asked to re-examine their stockpile and public purchase programs and to review their estimates of proper reserve stocks for each program. As a general yardstick, a safe reserve is regarded as one equalling either three months' total requirements or six months' import requirements, whichever may be larger. Variations may have to be made.

Transformer Purchase Orders—WPB—Rules governing purchase orders for certain types of transformers smaller than 250 KVA have been modified. It is not necessary to file application to purchase transformers of this size and type except those of special design as defined in instructions on Form WPB—2643.

Durable Products—WPB—Twenty-nine Limitation orders governing production of consumers durable products have been amended to indicate specifically that the products they cover are subject to the "spot authorization" procedure. This action removes provisions that might appear to conflict with Priorities Regulation 25.

Glycerine Substitute—WPB—Allocation controls have been removed from commercial grade non-crystalline sorbitol-isomeric mixtures, used as glycerine substitutes in the production of adhesives, glues, and food products.

Lower Lumber Grades—WPB—Lower grades of all species of hardwood may be sold to distributors and consumers on uncertified orders provided that their sale will not interfere with filling of certified orders.

Oil Industry Housing — OWI — Procedures to be followed by petroleum operators and employes in obtaining priorities for materials used in repair and construction of oil industry housing have been revised.

(*Continued on page* 148)



When ignorance is blistered!

It's the ignorant men who make costly mistakes. Trained men don't get hurt by small fires. Trained fire-fighters don't let little blazes grow into big ones.

The way to train workers in fire extinguishing is by demonstrating use of extinguishing equipment. Show how to handle real fires. Show how various types of extinguishers are handled on different kinds of fires.

Walter Kidde & Company has prepared a booklet — "How To Teach Fire-Fighting." It tells how to stage a fast-moving, interesting, instructive fire class. Write for your plant's copy.

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Kidde PROTECTS LIVES
HIGH PRESSURE CASES • FIRE PROTECTION

THE INSIDE STORY



THE OLD RELIABLE WRENCH

The two straight Pawls of hardened steel set in the solid stock of the handle where they rotate are backed up by the solid stock of the Handle and the Gear, the strongest construction that can be had.

The Shipper rotates on the solid stock of the Handle, not on a pin or screw.

Lowell Distributors are located everywhere.

LOWELL REVERSIBLE RATCHET WRENCHES

1869 LOWELL WRENCH CO., Worcester, Mass. 1944

Filtrine HIGH EFFICIENCY

WATER COOLERS

for

X-RAY — PHOTOGRAPHIC — FILM PROCESSING INSTALLATIONS

Self-contained Cabinet Models, with cooling unit in upper section and refrigerating machine in lower compartment . . . designed especially for film processing installations. Three models available . . . hourly capacities of 43, 95 and 175 gallons, reducing water from temperature of 80 degrees to 65 degrees, with cold water storage of 5, 14 or 25 gallons ready to meet emergency requirements.

WATER FREE FROM ALL SUSPENDED MATTER will improve the appearance of finished films or photographs. Use Filtrine Water Filters with all film processing installations.

Write for Complete Information.

FILTRINE MANUFACTURING CO.

53 Lexington Ave. Brooklyn 5, N. Y.

"Manufacturing Filtering and Cooling Equipment for 40 years"

HEAVY BEVEL SAFETY

(Reg. Trade Mark)

LETTERS AND FIGURES



"SAFETY" STEEL CONSTRUCTION. DEEPER, CLEAR IMPRESSIONS. WILL NOT SPALL, WILL NOT MUSHROOM. OUTSTANDING SERVICE. ANY SIZE CHARACTER FROM 1/32" UP.

Immediate Delivery

M.E. CUNNINGHAM CO. SAFETY STEEL STAMPS

154 E. Carson St. Pittsburgh, Pa.

(*Continued from page* 146)

Textile Bag Sales Lmited—WPB—Textile bags of any type may not be sold or delivered in quantities of 1,000 or more unless the buyer certifies that he will use the bags only for the purposes permitted by the textile bag order, M-221.

Finishing Hardware—WPB—Restrictions on the use of aluminum and zinc in builders' finishing hardware, cabinet locks and padlocks and the use of brass in essential working parts of cylinder locks have been removed by the War Production Board. Amendment to Schedule 1 of the hardware simplification order, L-236.

Snow Shovels—WPB—Snow shovels that may be made only from steel obtained from idle and excess inventories, are no longer limited to two types with certain gauges for the blades. Amendment to Schedule 1 of the hand tools simplification order, L-157.

Special Sales Construction Machinery—WPB—Special sales of new construction machinery listed in List B of Priorities Regulation No. 13 must be authorized by the War Production Board through approval of applications made on WPB form 1319. List B incorporates items of construction machinery in Schedule A of Order L-192.

Finishes Controls—WPB—Because of increasing raw-material shortages and difficulties in securing compliance with earlier orders, WPB has consolidated its controls over industrial finishes into a single conservation order, M-382.

Cordage Control to Stand—WPB—Officials of the Cordage Branch of WPB's Textile, Clothing and Leather Bureau report that they cannot foresee the possibility of any revocation or relaxation of present orders controlling production or use of cordage or burlap which might be expected upon collapse of Germany.

More Lumber Available—WPB—Additional quantities of certain lumber, which have accumulated in distributors' yards and is slow moving, will be made available to home owners, farmers and other consumers until December 31. Supply estimated at 500,000,000 board feet. Direction 8 (a) to Order L-335.

Tool Steel Purchasing Order Revoked—WPB—Supplementary Order M-21-h governing purchases of tool steel has been revoked, the WPB reports. Requirements for tool steel have decreased to a point where the controls and reports that M-21-h called for are no longer necessary. The revocation states that the action does not affect any liability which may have been incurred because of past operation under the order.

Capital Equipment, Unrated Purchase Orders—WPB—Producers of capital equipment, including machine tools, precision measuring and testing instruments, electric motors and generators, and other general industrial equipment, need no

(*Continued on page* 150)



Up-to-date ANSWERS TO YOUR Plastic Problems

The whirlwind progress in plastics poses some problems for the user, or the prospective user. Materials and processes for telephone parts differ vastly from those used on bicycles . . . and a handle for an iron calls for different characteristics than demanded by a water flask for a soldier.

This is where experience counts, and the right equipment to turn out the parts accurately and economically. At General Industries, we have both. And we keep up to date in our engineering and with our machinery.

That's why it might be wise for you to consult with General Industries if you have a problem in plastics. We don't pretend to know all there is to know about plastics; but we believe we have, in our group of men, enough combined experience and initiative to meet any molding problem that can be met—and some that other folks feel might be impossible.

Our capacity for service is extensive. We are one of the really LARGE CAPACITY MOLDERS in the country. That means we can handle large moldings as well as smaller ones. We do compression, transfer and injection molding, in all plastic materials moldable by these processes.

We prefer to make our own molds and assume complete responsibility for the quality of the work, as well as for its prompt delivery.

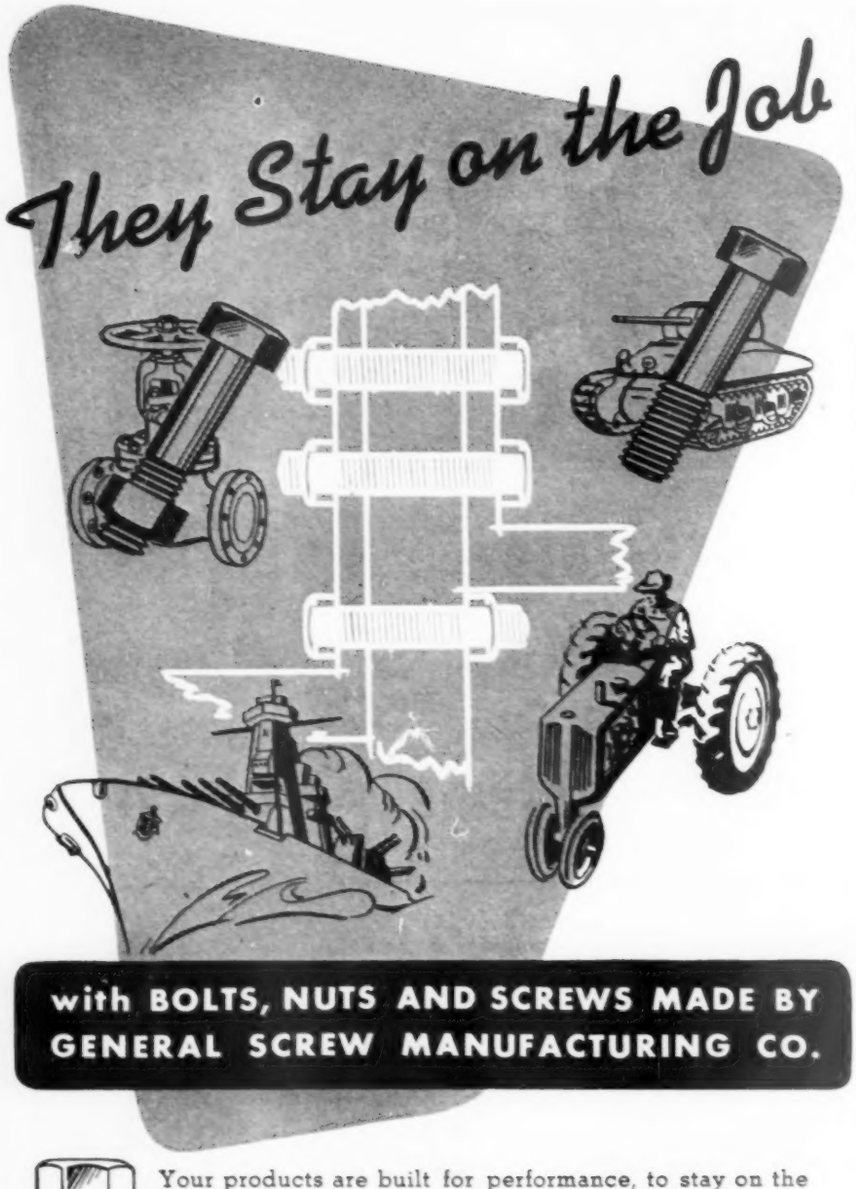
We'll be glad to discuss the use of molded plastics for your products or parts. There's a wealth of experience here that you can call on, and get prompt and reliable answers. No obligation, of course.

THE GENERAL INDUSTRIES COMPANY

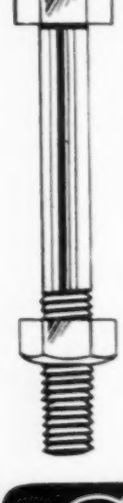
MOLDED PLASTICS

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with BOLTS, NUTS AND SCREWS MADE BY GENERAL SCREW MANUFACTURING CO.



Your products are built for performance, to stay on the job, delivering the goods, day in and day out. The products of General Screw are also built to assure performance and endurance. Raw material is carefully selected; threads are accurate, slots true-centered, heads uniform, shanks straight. All the strong, lasting, quick assembly qualities you want are built into General Screw products.

FACILITIES FOR PRODUCTION RUNS

Your requirements for bolts, cap screws, machine screws and nuts in large quantities can be furnished through our modern facilities for long production runs. You will find it well worth while to investigate our productive capacity to supply your quantity needs. **Write today.**

GENERAL SCREW Manufacturing Company
1238 W. Monroe Street, Chicago 7, Ill., U.S.A.

(*Continued from page* 148)

longer obtain War Production Board permission to begin production on unrated purchase orders for such equipment, placed under Priorities Regulation No. 24.

Machines and Parts Price Rules—OPA—Several changes in regulation governing prices of machines and parts, and machinery services, have been announced by OPA. Amendment 124 to MPR 136; Amendment 41 to MPR 188.

Rubber Bureau—WPB—The office of Rubber Director has been abolished through the recommendations of Col. Bradley Dewey, Rubber Director, and a Rubber Bureau has been set up within WPB with James F. Clark as Director.

Plant Additions up to $10,000 Cost—WPB—Heating utilities have been granted right to make certain minor plant additions and extensions up to $10,000 in material cost without obtaining approval from Office of War Utilities of WPB.

Metals Quantities Increased—WPB—More iron, steel and other metals may be used to make hair clippers; copper and alloys may be used in pocket knives; and aluminum is permitted for any type of cutlery, WPB has announced.

Light Weight Papers, Price Differentials—OPA—In line with WPB order requiring paper manufacturers to shift production of several grades of papers to lighter weights as part of fiber conservation program, OPA has announced standard price differentials for lighter weights of offset and papeteria papers. Amendment 4 to MPR 451, and Amendment 5 to MPR 450.

Aluminum Output—WPB—Despite recent curtailment in production, output of aluminum today, due to wartime facilities expansion, remains many times greater than peacetime production, according to WPB.

Copper for Chromium Undercoating—WPB—Copper may now be used as an undercoating for chromium and nickel plating, WPB reports. Conservation Order M-9-C amended.

Steel for Civilian "Spot" Production—WPB—WPB's Requirements Committee has allotted 100,000 tons of carbon steel and 25,000 tons of alloy steel for distribution to manufacturers of civilian goods in fourth quarter under "spot authorization" procedure.

Grades 1-2 Enamels—WPB—Because of difficulties that have developed in use of products conforming to specifications for lustreless finishes C-173 Grade 2, semi-gloss 3-174 Grade 2, and gloss finishes 3-175A Grade 2, authorizations processed by the Chemicals Bureau permit use of either Grade 1 or Grade 2 enamels under these specifications.

Mark-Ups on Autos Hiked—OPA—To assist in maintaining vital transportation facilities, OPA announces that dealers'

(*Continued on page* 154)

OH YES! THIS NEW SAW CUTS NON-FERROUS METALS

DoALL Buttress
THE NEW WIDE-SPACED HARD TOOTH SAW

Does faster, cleaner cutting of:

★ MANGANESE ★ ALUMINUM ★ ZINC
★ BRASS ★ COPPER ★ BRONZE
★ GRAY CAST IRON ★ PLASTICS ★ WOOD



First developed by DoALL engineers to help aircraft production over the hump, the DoALL Buttress Saw Blade is rapidly finding its way into plants everywhere for contour and straight-line cutting of extra-hard, porous, and every type of tough material that other saws can't handle.

The DoALL Buttress does the work in a fraction of the former time and fits any band sawing machine.

IMMEDIATE DELIVERY — Available in widths of ¼", ½", ¾" and 1" and various pitches at all DoALL Supply Points.

Visit the DoALL Exhibit at the Metal Show Oct. 16 to 20, Cleveland Auditorium.

NO RE-SHARPENING

The DoALL Buttress Saw will last longer than ordinary saws, so it's economical to use until completely worn out — no work stoppage for re-sharpening — and then place a new saw on the machine.

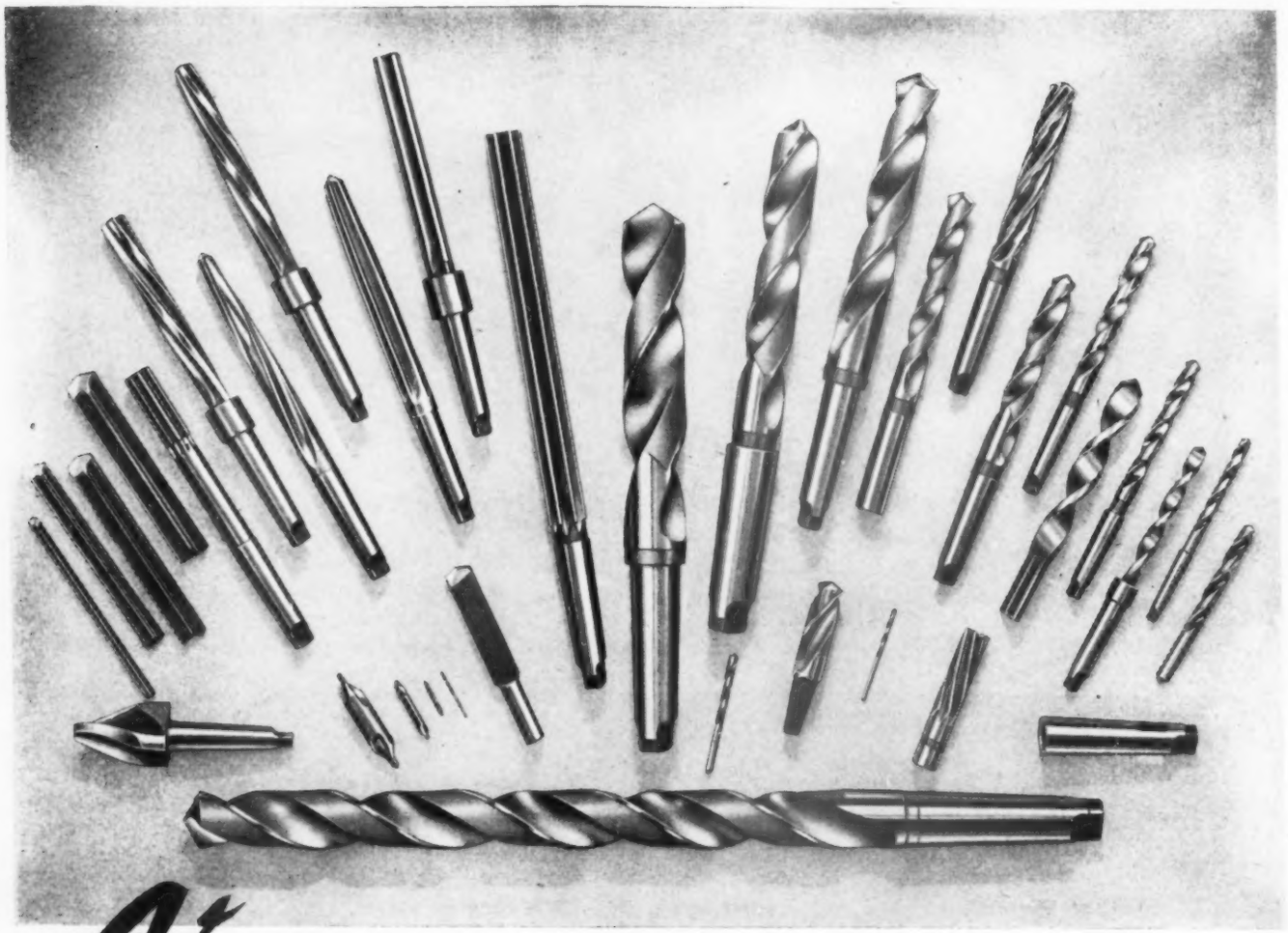


DoALL

INDUSTRY'S NEW SET OF TOOLS

Send for Circular and Full Information
THE DoALL COMPANY, 228 N. Laurel Ave., Des Plaines, Ill.

Sales & Service Offices: Baltimore, Boston, Chicago, Cleveland, Denver, Detroit, Erie, Houston, Indianapolis, Los Angeles, Milwaukee, Minneapolis, New Orleans, New York, Orlando, Philadelphia, Pittsburgh, Rochester, Rockford, St. Louis, San Francisco, Seattle, Toledo, Tulsa, West Hartford.



Victory IS BUILT INTO THEM

THESE are the seasoned disciplined, shock troops, the spearheads of attack in the constant war on costs—these Celfor Reamers and highspeed Twist Drills.

Two good examples of the victorious quality built into Celfor tools are the Celfor Type B Reamer—made only by Clark; and Celfor high speed Twist Drills, forged to shape, then twisted while hot to densify the metal for greatest durability. The Celfor process preserves and increases the inherent strength and toughness of finest tool steels—produces tools that can not be excelled for strength and cutting qualities.

CELFOR

Take this simple, victorious step toward savings in man-hours, longer tool life and lower tool costs: send for the facts about Celfor Drills and Reamers.

Another PRODUCT of CLARK EQUIPMENT COMPANY

CLARK EQUIPMENT COMPANY
BUCHANAN, MICHIGAN

OTHER CLARK PRODUCTS — AXLES (Front and Rear) FOR TRUCKS AND BUSES • AXLE HOUSINGS • TRANSMISSIONS • METAL SPOKE WHEELS ELECTRIC STEEL CASTINGS • GEARS AND FORGINGS • RAILWAY CAR TRUCKS • BLIND RIVETS • INDUSTRIAL TRUCKS AND TRACTORS



88,000 pounds per sq. in. tensile strength in extruded shapes, 75,000 pounds in alclad sheet—stronger than any aluminum alloy in use today—nearly two times the yield strength of ordinary structural steel and one and one-third times the tensile strength. That's Alcoa's new high strength alloy, 75S.

No untried youngster, this alloy. Alcoa's research and development divisions have spent years in testing the performance of experimental quantities. In the fall of 1943, the first commercial run was put through Alcoa mills, and production has continued at an ever-increasing pace. Already, at least eight major aircraft companies are building new experimental planes in which 75S is the principal structural material.

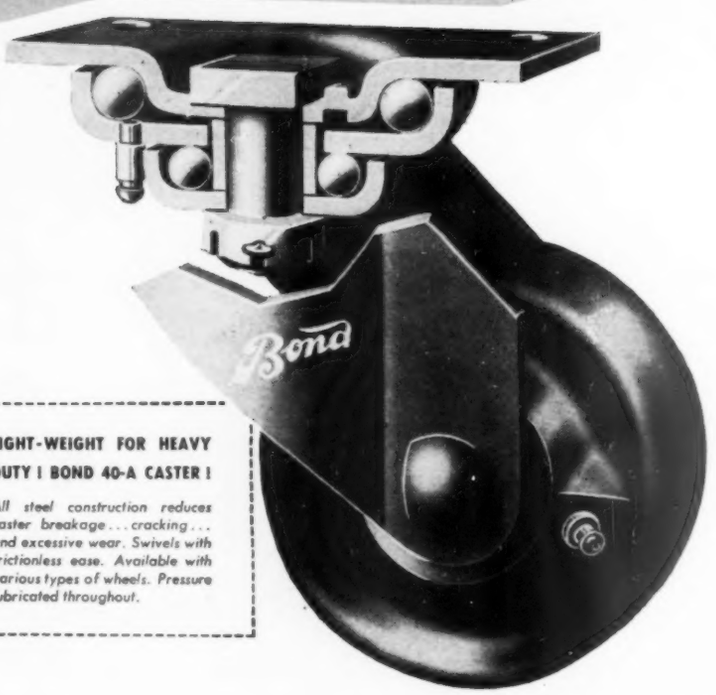
75S is now a standard alloy for alclad sheet and extruded shapes. Plain sheet, plate, rolled rod and bar made from 75S continue on an experimental basis, but may be obtained for certain projects.

With WPB approval, you can employ 75S in your products. Our representatives will gladly help you work it into your designs. ALUMINUM COMPANY OF AMERICA, 1931 Gulf Building, Pittsburgh 19, Pa.

ALCOA ALCOA ALUMINUM REG. U.S. PAT. OFF. **ALUMINUM**



BOTH are ENGINEERED for the Job



LIGHT-WEIGHT FOR HEAVY DUTY ! BOND 40-A CASTER !

All steel construction reduces caster breakage . . . cracking . . . and excessive wear. Swivels with frictionless ease. Available with various types of wheels. Pressure lubricated throughout.

LIKE skyscrapers, truck casters must be engineered for load factors and service conditions. Ball race and base . . . fork and king bolt . . . axle and tread . . . every part of a Bond Truck Caster is engineered with thorough consideration for practical performance. Every Bond Caster is right for the job because it's *built-for-the-job.*

Casters are engineered equipment and must be bought with care. You need the right information to make the right selection . . . and you'll find it in Bond Catalog K-34. Write today for your free copy.

BOND FOUNDRY & MACHINE COMPANY, MANHEIM, PA.

Bond* TRUCK CASTERS

* Reg. U. S. Pat. Off.

(Continued from page 150)

mark-ups for warranty sales of used commercial vehicles of model years 1937 and later have been increased to encourage their repair and maintenance. Amendment 5 to MPR 341.

Time Limit for Filing Protests—OPA—Elimination of 60-day time limit in which protest could be filed against denial of an application for adjustment of maximum price for commodities or services under Government contracts or sub-contracts, is announced by OPA. Amendment 6 to Procedural Regulation 6.

Aluminum Ingot Cutback—WPB—With ample supplies of aluminum ingot on hand for both military and essential civilian production, WPB has ordered further cutbacks in output of the light metal.

"Spot Procedure" Products Orders Amended—WPB—Eight additional limitation orders governing production of plumbing, heating and cooking equipment have been amended to indicate specifically in orders themselves that the products they cover are subject to "spot authorization" procedure issued August 15. Commercial dishwashers (L-248); Commercial cooking, food and plate warming equipment (L-182); Water Heaters (L-185); Oil Burners (L-74); Cast iron boilers (L-187); Plumbing and heating tanks (L-199); Coal stokers (L-75); and Domestic Cooking Appliances and Heating stoves, (L-23-c).

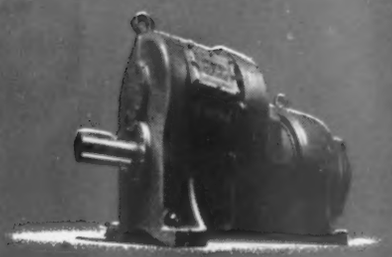
"Job" Shoes May be Sold—OPA—Employers and institutions may apply for permission to sell shoes which they bought to furnish to their personnel but which are no longer being used for that purpose.

Metal Testing Technique—WPB—Traditional chemical methods of analyzing metals are yielding to more modern spectrographic technique, which are said to save time, manpower and money for war industries using metals.

Reconditioning Drums — OPA — Establishment of ceiling prices covering charges for reconditioning of used steel drums and prices at which both emptiers and resellers may sell such containers of 7 gallons and upward capacity were announced. (Amendment 2 to MPR)

Installing Machinery—WPB—The maintenance, repair and operating supplies symbol MRO and rating under CMP Regulation 5 may be used to obtain materials to install or relocate machinery or equipment.

Electronics Orders "Unrated"—WPB—Purchase orders for electronic equipment accompanied by either a Consumer's Certificate or a Supplier's Certificate are unrated orders and carry no priority by virtue of certificate, WPB Radio and Radar Division in Interpretation 3 to Limitation Order L-265.



1/10 TO 100 HORSEPOWER
Five types of gearhead motors have reduction ratios ranging up to 432:1.



HIGH EFFICIENCY
More efficient than other types of slow speed drives . . . only 2% power loss in each stage of reduction. In parallel shaft type.



MASTER GEARHEAD MOTORS

These are the ***good reasons why*** gearhead motors met with such immediate success when The Master Electric Company originated and pioneered the first line of gearhead motors, years ago.

These are the ***good reasons why*** more gearhead motors in use today carry the Master name than all other makes . . . COMBINED.

These are the ***good reasons why*** Master Gearhead Motors will help you save money and still add greatly to the convenience, compactness and safety of your motor driven machinery. For best results, use them for either your plant or your products.

THE MASTER ELECTRIC COMPANY ● DAYTON 1, OHIO



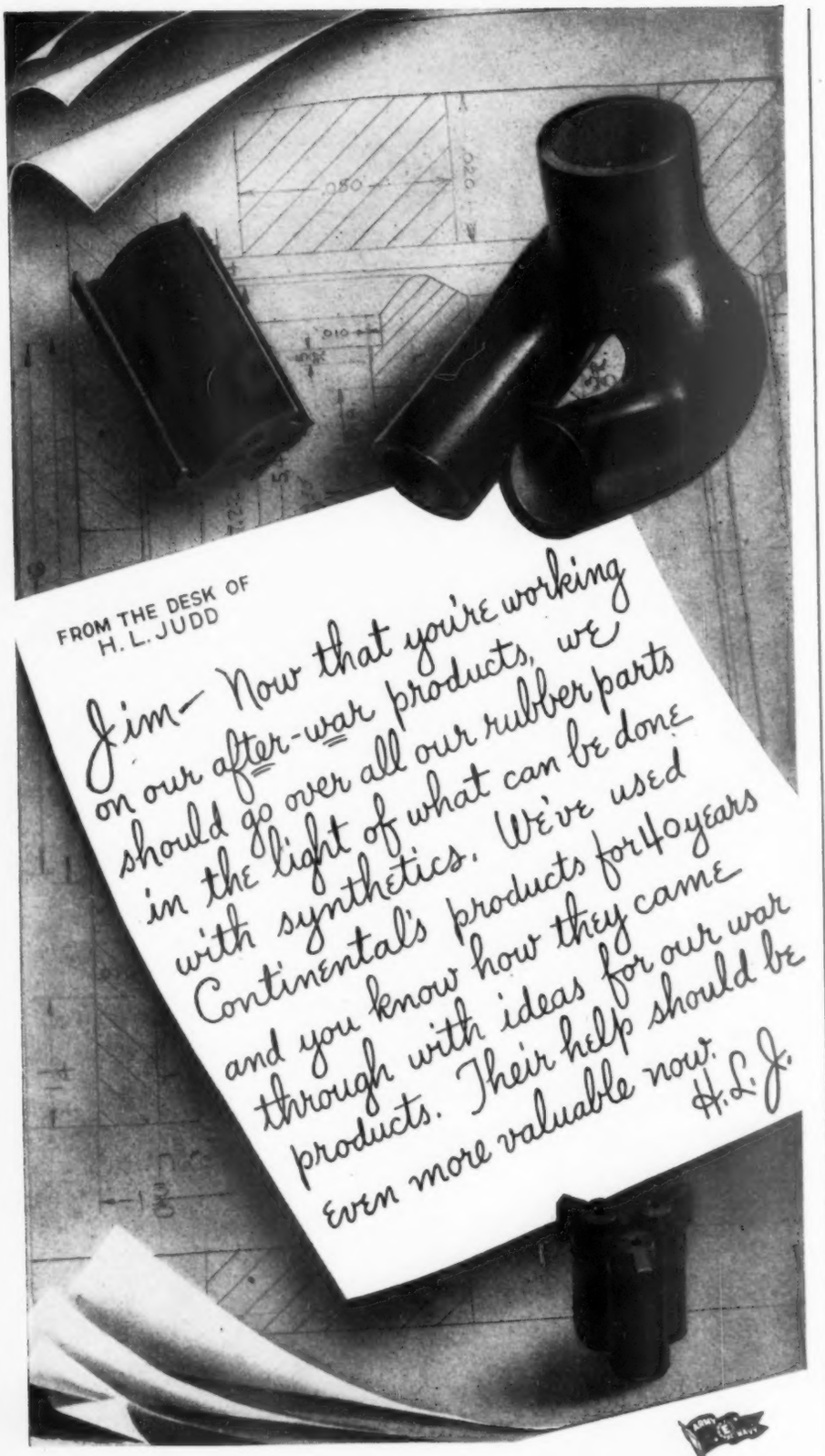
PROVEN RELIABILITY
Their durability and stamina have been proven with millions of hours of service all over the world.



UNDIVIDED RESPONSIBILITY
The complete Gearhead Motor is designed and built by one manufacturer in one plant.



COMPACT
Integral, compact design saves space, saves money, improves appearance.





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Boston, Mass. Dallas, Texas Los Angeles, Cal. Pittsburgh, Pa.
Buffalo, N. Y. Dayton, Ohio Memphis, Tenn. Rochester, N. Y.
Chicago, Ill. Detroit, Mich. Milwaukee, Wis. San Francisco, Cal.
Cincinnati, Ohio Indianapolis, Ind. New York, N. Y. St. Louis, Mo.

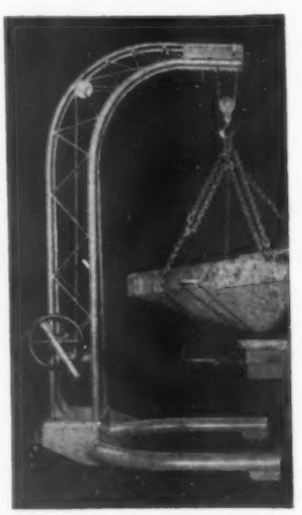
CONTINENTAL RUBBER WORKS
ERIE, PENNSYLVANIA, U. S. A.

WAR STANDARD FOR WHITWORTH SCREW THREADS

So that Whitworth screw threads may be produced more easily by American manufacturers while maintaining complete interchangeability with threads of British Standard Whitworth form, the American Standards Association has approved a new war standard, Screw Threads of Truncated Whitworth Form, B1, 6-1944. The new American War Standard covers coarse and fine threads, straight pipe threads and special threads. Copies of the standard are available at 50c per copy from American Standards Association, 29 West 39th St., New York, N. Y.

PORTABLE FLOOR CRANES

New portable cranes constructed of welded steel with high tensile drop forgings for the axle, hook and fork, have been developed by the Hill Acme Co., Canton Division, 6400 Breakwater Ave., Cleveland, Ohio. The operating mechanism is a self-locking worm which automatically holds the load at any point without the use of a ratchet and pawl. Eccentric axle design locks the front wheels when the pulling handle is upright, making for safety to the operator and the material being lifted. The crane is termed a 4-in-1 tool—a crane, a hoist, a shop truck, a portable ladder. It is made in eight sizes ranging from 2000 to 6000 pounds capacity.



Self-Locking Worm Holds Load at Any Point

SILVER PLATING ON ALUMINUMS

Silver may now be deposited electrolytically onto aluminum or aluminum alloys by means of a method, known as the Preplate Process, a development of the Technical Processes Division of Colonial Alloys Company, Philadelphia, Pa.

Silver deposits of considerable thickness can go directly onto the aluminum surfaces, or follow a copper, nickel, zinc or cadmum deposition.

(*Continued on page* 158)

IDENTIFY

Your Post-War Products with MEYERCORD DECALS!

A wide variety of successful war uses under gruelling combat and climatic conditions have even more firmly established Meyercord Decalcomania as the perfect material for post-war product identification and instructions.

Meyercord Decal nameplates, lubricating guides, wiring diagrams, instructions, dial faces, serial and patent numbers, etc., can now be made resistant to acid, abrasion, moisture, heat, cold, petroleum vibrations, fungus growth. Meyercord Decals are washable, durable and easily applied with water or cement to any commercial surface at production line speed. They save time, cost, materials and weight.

Designs may be reproduced in any size or number of colors, and can be applied to flat, convex or concave surfaces ...even *rubber* and *crinkled* finish. Investigate the amazing variety of uses for Meyercord Decals in every branch of your business. Address Dept. 61-10.

FREE DESIGNING SERVICE

Manufacturers and designers are invited to avail themselves of Meyercord's free designing and technical consultation service on postwar identification



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CHICAGO 44, ILLINOIS

BUY AN EXTRA BOND NOW!

Protect INSIDE AND OUTSIDE THREADS, CUTTER TEETH, FINISHED CYLINDRICAL SURFACES with Spiral Wound Paper Tubes!

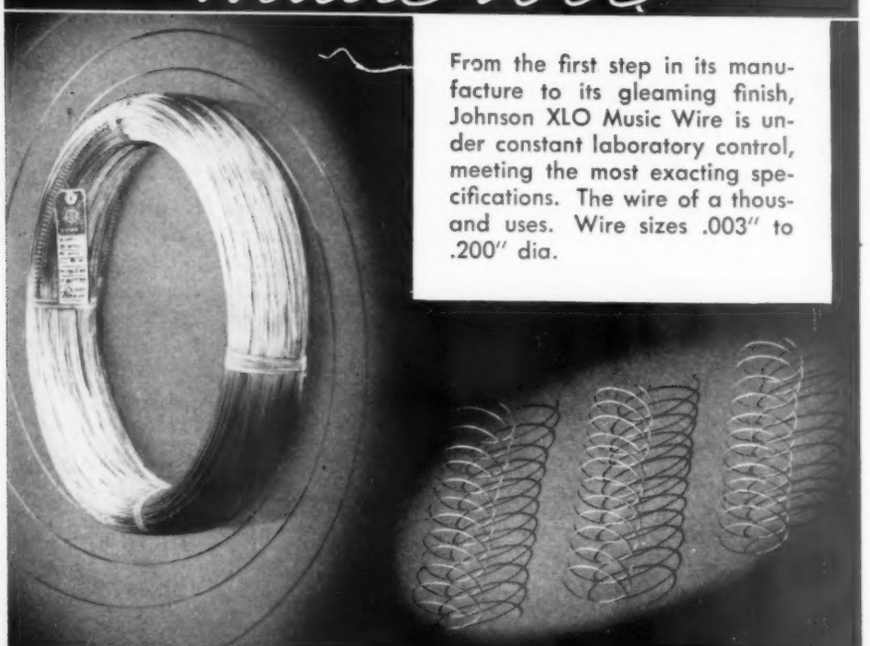


Guard against damage in intra-plant handling or during shipment; save time and work in packing operations. Tubes made to your requirements in diameters from 3/8" to 6"—any length—from kraft, chipboard, special compositions; available waxed or plain. Write for complete information; get details, too, on our other lines of paper tubes and cans, gaskets, die-cut paper products.

PAPER Pierce PRODUCTS

PIERCE PAPER PRODUCTS CO.
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JOHNSON XLO Music Wire



From the first step in its manufacture to its gleaming finish, Johnson XLO Music Wire is under constant laboratory control, meeting the most exacting specifications. The wire of a thousand uses. Wire sizes .003" to .200" dia.

JOHNSON STEEL & WIRE CO., INC.
WORCESTER 1, MASSACHUSETTS.
NEW YORK ATLANTA AKRON CHICAGO LOS ANGELES

(*Continued from page* 156)

The aluminum is thoroughly cleaned as prescribed, passivated, immersed in Preplate Solution for a few seconds, and then electroplated in the usual manner, using the regular equipment found in all plating shops.

Torsion, heat, corrosion resistance and weathering tests have shown up well. Adherence is good.

Because of its high rate of conductivity, silver plating onto light weight aluminums, opens up vast possibilities in the electrical, equipment, appliance, transportation and communications fields.

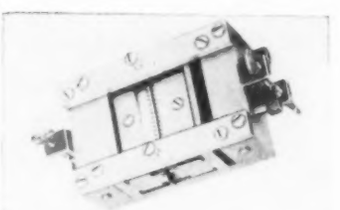
High frequency, electronic, sending and receiving transmission units, instruments, contact points and energizing mechanisms may improve the quality of many products.

Rated high on the scale in heat conductivity and transfer, silver on aluminums may be considered favorably in many heat transfer applications.

* * *

JIG SIMPLIFIES TECHNIQUE OF SHEET TESTNG

A new jig to determine compression yield strength in aircraft design as developed by W. P. Montgomery and R. L. Templin is being manufactured by The Baldwin Locomotive Works, Southwark division, Philadelphia, Pa.



Testing Single Thickness of Sheet

Common practice has been to obtain values for compression yield in sheet metal by testing sheets in packs—the sheets being piled to a thickness equal to the width of this test sheet, and the pack would then be supported by needle points held in a special fixture.

With the new method developed by Montgomery and Templin, it is possible to test a single thickness of sheet in compression, supporting the sheet in the jig as shown in the photograph with a multiplicity of small rollers. The extensometers are attached to the edges of the sheet.

The testing of the material in single sheet form simplifies the technique of testing. The Montgomery-Templin jig —simple in design—provides a convenient apparatus for making such tests.

It is sai dto offer possibilities in plastics as well as metals.

NEW LINE OF STEEL CHAIRS

In line with recent WPB release permitting the manufacture of steel chairs, Royal Metal Manufacturing Co., Chicago,

(*Continued on page* 160)

On all Woodworking Machines...

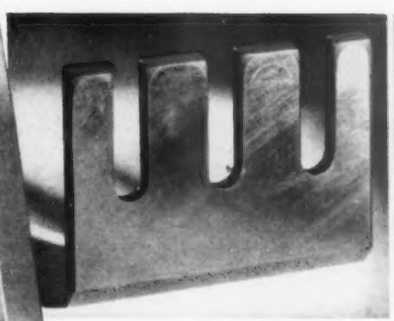
SIMONDS RED BACK MACHINE KNIVES

Cut Faster...Smoother...Longer





PLANER KNIVES—For surfacing lumber on square head planers. Tool steel edge, weldedto lower carbon steel back.



HOG KNIVES
For cutting up boiler fuel, scrap paper, etc. Tough, shock-resistant, long-lived.



CHIPPER KNIVES
Stand high speeds and heavy cuts without cracking or chipping out. Cut uniform chips.



VENEER KNIVES
Hold a sharp edge, lessen strain on machine, cut better veneer on less power.



THIN HIGH SPEED KNIVES
For fast-feed operation on round-head machines. Stand high heat without softening.

Production men can count on the Machine Knives with the *Red Back*... to back them up with top performance, better production, and more machine-hours. Only Simonds' own electric steel is used in *Red Back* Knives. And every knife is uniformly hardened and tempered under automatic control... then precision-ground... and finally checked for balance and finish.

Every step of production is kept under Simonds control, in order to deliver perfect cutting tools in perfect condition. *And deliveries are being made promptly.* So get your orders in *right now* for Simonds Red Back Knives.

ARMY E NAVY

BRANCH OFFICES
1350 Columbia Road, Boston—27, Mass.; 127 S. Green St., Chicago—7, Ill.; 228 First Ave., San Francisco—5, Calif.; 311 S. W. First Ave., Portland—4, Ore.; 520 First Ave. So., Seattle—4, Wn.; 31 W. Trent Ave., Spokane—8, Wn.

SIMONDS
SAW AND STEEL COMPANY
FITCHBURG, MASSACHUSETTS

PRODUCTION TOOLS FOR CUTTING METAL, WOOD, PAPER, PLASTICS

factory accuracy

in field adjustments

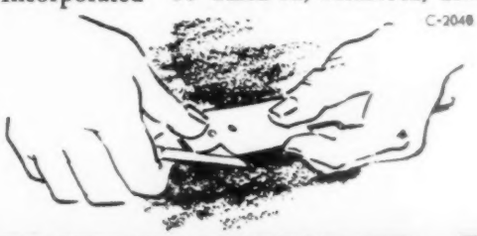


LAMINUM shims provide those quick-precision adjustments which—as in aircraft—are as vital in the field as in the original assembly.

Shims cut to your specifications. Stock shim materials obtainable from your dealer. Write us for further information and shim application chart.

Laminated Shim Company, Incorporated 90 Union St., Glenbrook, Conn.

C-2048



it's

LAMINUM

TRADE MARK

THE SOLID SHIM THAT *peels* FOR ADJUSTMENT

(*Continued from page* 158)

Ill., is introducing new line of all-welded, tubular steel chairs and stools in variety of swivel, adjustable and non-adjustable models. Protruding bolts and other sharp surfaces have been eliminated. Adjustable models have but a single bolt adjustment which is made by sliding tube in each leg, tubes being punched at intervals to receive the adjusting bolt. Backrests are curved to fit properly against the small of the back and are mounted on spring steel uprights which can be adjusted up and down to fit the occupant. Seats are of masonite.

MINIATURE MACHINE SCREWS

Manufacturers Screw Products, 216-222 W. Hubbard Street, Chicago (10) Illinois, manufacturers of the Stronghold line of fastening devices, has increased the range of sizes of its "Perfection in Miniature" Machine Screws.



Available 0-80, 1-64, and 1-72

These screws, "so tiny they might have been designed for your watch," are now available in 0-80, 1-64 and 1-72 thread diameters, both in steel and brass. The fasteners are used in vitally important precision equipment such as head phones, microphones, hearing aids and delicate instruments.

COMMERCIAL PRODUCTION OF SILICONE FLUIDS

Liquid silicones are in quantity production, it was announced recently by Dow Corning Corporation of Midland, Michigan. These new organo-silicon products have been available for many months under the name of Dow Corning Fluids but their use has been restricted to a few applications essential to the war effort. Recent expansion in production capacity now permits them to be offered for adaptation to any war use indicated by their unusual combination of properties.

Dow Corning Fluids are water white and are characterized by an extremely low rate of viscosity change with temperature, compared to petroleum oils of equivalent viscosity. They also have higher flash and fire points and a complete freedom from solvent or swelling effect on synthetic or natural rubber and

(*Continued on page* 164)



Whatever the grinding purpose may be, ABRASIVE COMPANY GRINDING WHEELS deliver Top Flight Performance. If you're looking for improved results in uniformity, economy and longer wheel life . . . if your job, or jobs, are listed below . . . then we cordially invite you to investigate ABRASIVE COMPANY PRODUCTS. Write for FREE Data Book—120 pages of interesting information on modern grinding.

Wheels, Discs, Segments, Grain, Mounted Points for

Internal Grinding	Cylindrical Grinding	Surfacing
Tool and Cutter Grinding	Roll Grinding	Snagging
Centerless Grinding	General Purpose Grinding	Cutting-Off

COMMANDING QUALITY · · · OUTSTANDING RESULTS!

ABRASIVE COMPANY

DIVISION OF SIMONDS SAW AND STEEL CO.

TACONY & FRALEY STS., PHILADELPHIA, PA. • DISTRIBUTORS IN ALL PRINCIPAL CITIES

Which of these 5





GATES V-Belts

Best Fits *YOUR* Needs?

Your GATES RUBBER ENGINEER Can Tell You.

Phone Him TODAY!

Whenever a drive in your plant gives you the slightest trouble, it is a good plan to phone the Gates Rubber Engineer. He is a specialist who makes a business of improving drive operation.

For example, you may have a drive that appears to be wearing out belts faster than it should. In most cases the Gates Rubber Engineer can correct the difficulty quite easily and will find no need for you to adopt belts of any special construction.

At times, however, he will find conditions under which a V-Belt of special structure can most profitably be used—and he can then supply a Gates V-Belt that is precisely engineered to meet the unusual conditions.

The Gates V-Belt of special synthetic rubber is a case in point. For more than 6 years now, Gates has been supplying industry with many thousands of these belts. Under severe conditions of heat and oil, the Gates special synthetic belt actually outwears any natural rubber belt by as much 230%.

In your particular application, V-Belts with tension members composed of flexible steel cables—or of rayon cords—may prove to be the most efficient and economical. Again, Static-Safety V-Belts may best fit your special need.

In any case, the wisest move you can make is to phone the Gates Rubber Engineer. (Just look under "Gates Rubber" in your phone book.) He will come right to your plant—will thoroughly analyze any drive problem you may have—and he will always recommend the practice that will be most efficient and economical for you.







THE GATES RUBBER COMPANY

Engineering Offices and Stocks in All Large Industrial Centers

4410

GATES VULCO ROPE DRIVES

CHICAGO, ILL. 549 West Washington
NEW YORK CITY 215-219 Fourth Avenue
ATLANTA, GA. 738 C & S National Bank Building
LOS ANGELES, CAL. 2240 East Washington Boulevard
DENVER, COLO. 999 South Broadway
DETROIT, MICH. 8663 Grand River Avenue
PORTLAND, ORE. 333 N. W. 5th Avenue
DALLAS, TEXAS 2213 Griffin Street
SAN FRANCISCO, CAL. 1090 Bryant Street

Billings Wrenches



B

•1869•
•1944•

BILLINGS
75th YEAR

WAR, proving ground for Tomorrow! . . . .

Billings Wrenches are at war. Tests in war are many and they are tough. Because of this unusual opportunity for practical test a still better Billings Wrench is on the way.

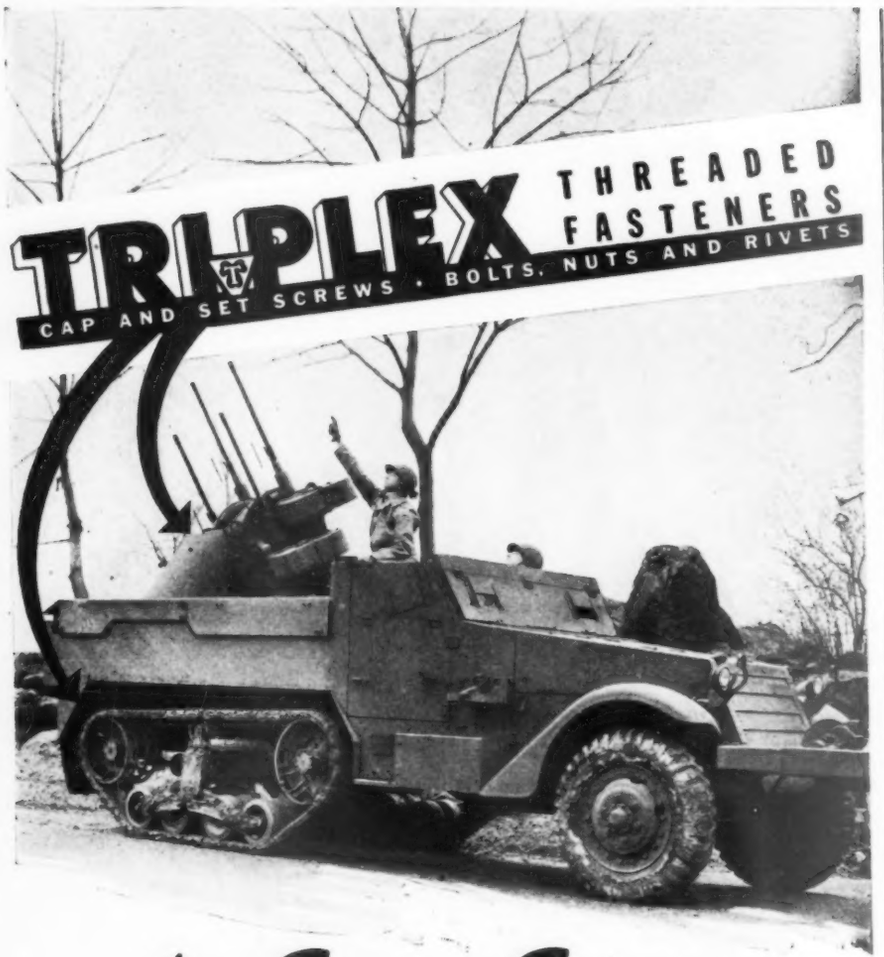
YOU CAN RELY ON BILLINGS TOOLS

Billings

FORGED TOOLS

THE BILLINGS & SPENCER CO.

HARTFORD 6, CONN., U.S.A.



for Severe Service

ON THE HALF-TRAC!

The Half-Trac built by the White Motor Company is taking more punishment than any truck ever built.

Constructing battle wagons for the severe service of combat requires Threaded Fasteners that are tough enough to "face the music" coming from the enemy's field guns. That means resistance to firing vibration and explosion shocks.

If there is anything tougher than TRIPLEX in Threaded Fasteners, we would like to hear about it.

TRIPLEX SCREW COMPANY

5331 GRANT AVENUE • CLEVELAND 5, OHIO

(*Continued from page* 160)

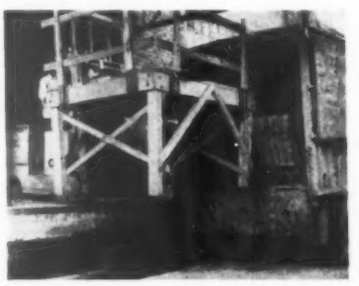
on many kinds of plastics. They are not affected by oxygen under pressure at ordinary ranges of temperature. Since they are resistant to oxidizing solutions, mineral acids, salts and alkalies, they have proved to be highly useful as an impregnant for asbestos packing and gaskets in chemical pumps.

Two series of Dow Corning Fluids are available depending upon the temperature and viscosity range to be covered. Dow Corning Type 200 Fluids are useful down to -40°C. or up to 200°C. and include medium through very high viscosity liquid silicones. They are nonvolatile and possess flash points in excess of 600°F. They are not miscible with alcohol glycol, glycerin or lubricating oil but will blend readily with most of the common organic solvents including light naphthas.

For extremely low temperature uses, Dow Corning Type 500 Fluids include liquids ranging in viscosity from that of water to medium viscosity fluids. They are all useful at temperatures down to -70°C. and below. The very low viscosity fluids are distillable and have appreciable vapor pressures at room temperature but higher viscosity fluids in this series are non-volatile and useful up to 200°C.

PORTABLE PLATFORM SOLVES NARROW STREET LOADING

The problem of unloading motor trucks on a narrow and congested street has been neatly solved by R. J. Reynolds Tobacco Company, Winston-Salem, North Carolina. When incoming loads were

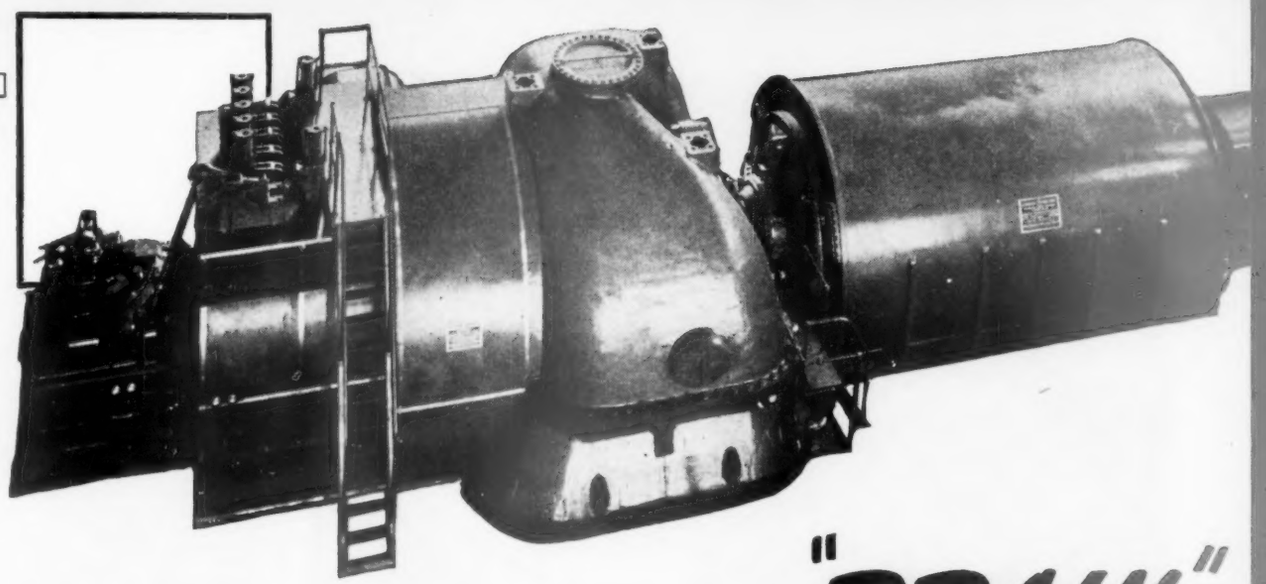


Setting the portable platform in place

backed up at right angles to the receiving room door they blocked traffic badly and were a possible source of nuisance accidents. The Reynolds plan made it possible for the delivery truck to park lengthwise of the street for unloading, by building a rugged portable loading and unloading platform, which can be kept inside the building and out of the way when not in use.

When a loaded truck arrives at the plant the driver parks near the entrance, close to the wall, and lowers the tailgate. Then an Elwell-Parker Fork Type Power Truck picks up the portable platform and spots it on the pavement so that it provides a continuous runway from the floor of the truck to the floor of the receiving room.

(*Continued on page* 166)



Why that sensitive turbine "BRAIN" needs this better turbine oil

THE GOVERNOR mechanism of a steam turbine is as delicately balanced as a finely made watch. Yet the oil that lubricates this sensitive turbine part must also be able to withstand the high speeds and pressures encountered in lubricating the main and thrust bearings.

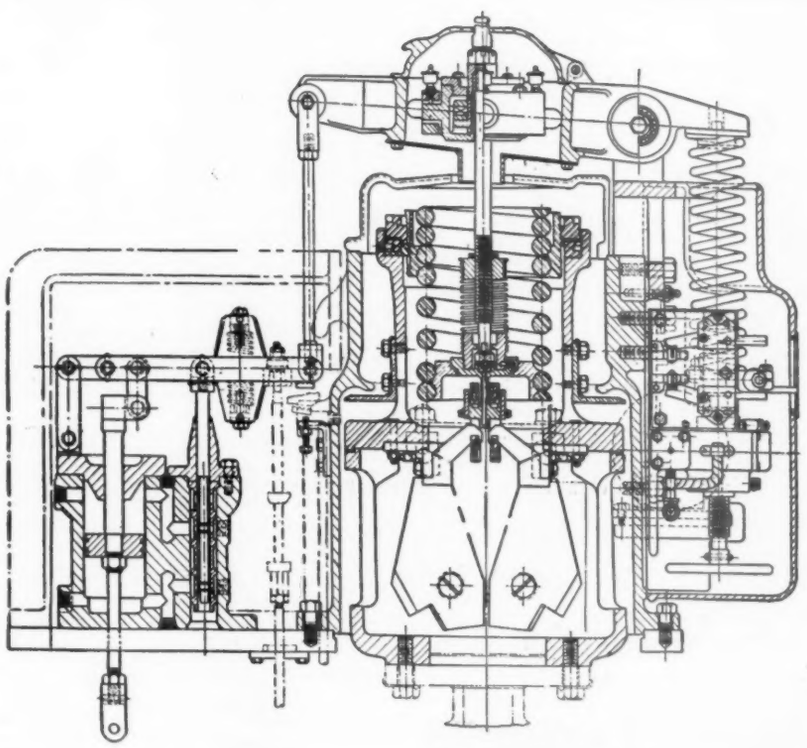
It is under these extreme operating conditions that ordinary turbine oils break down. They oxidize rapidly . . . develop rust. If the oil does not have the properties to resist oxidation and prevent rust, you have trouble on your hands.

Rust, which may either be formed in the governor or carried into it by the oil, gets into the delicate mechanism, causing it to stick. And when an oil oxidizes it may form lacquer and sludge which in turn "gums up" the governor.

These are the problems Shell Engineers licked when they perfected Shell Turbo Oil. Developed expressly for turbine use, Shell Turbo Oil has *superior oxidation stability* as well as the ability to *prevent rust.* Drain and clean your turbines...then change to Shell Turbine Oil and you'll soon see *why* it was the first of its type to be approved as meeting rigid U. S. Navy specifications.

* * *

Get the full details from your Shell man today. Write Shell Oil Company, Incorporated, 50 W. 50th St., New York 20, N.Y., or 100 Bush Street, San Francisco 6, California.



SHELL TURBO OIL

SHELL



Westinghouse

PLANTS IN 25 CITIES . . . OFFICES EVERYWHERE

MAZDA LAMPS FOR SEE-ABILITY

WESTINGHOUSE PRESENTS JOHN CHARLES THOMAS • SUNDAY 2:30 EWT., N.B.C. ★ TED MALONE • MON., WED., FRI. 10:15 EWT., BLUE NETWORK



Tough coats for Electrodes...

LONG LIFE FOR LAMPS

Sealed in each end of a fluorescent lamp is a coil of finely drawn tungsten. These coils are coated with a special material which emits billions of electrons. The electrons bombard the mercury vapor . . . and also the coating on the coils.

How long and efficiently the coils will function depends on how well the coating withstands such bombardment.

Persistent Westinghouse research has developed an electronic emission coating of extraordinary efficiency. Not only does it supply a high quota of many billions of electrons per second, but it also is extremely tough, thus gaining capacity to stand up in service, giving hour after hour of efficient light.

And that's why, when you order fluorescent lamps, it pays to ask for Westinghouse. Your Westinghouse dealer can supply you right now for essential war lighting . . . and also to a limited extent for essential civilian use. Westinghouse Electric & Manufacturing Co., Bloomfield, New Jersey.

HELP SHORTEN THE WAR . . . BUY MORE BONDS THAN BEFORE!

STARRETT presents the new
"Skip-Tooth" Metal Cutting BAND SAW



for fast cutting of:

MAGNESIUM . . . ALUMINUM . . . BRONZE . . . SOFT BRASS and other non-ferrous metals; also for special compositions, fibre, bakelite, plastics and wood.

Like all Hacksaws and Metal Cutting Band Saws bearing the STARRETT name, this new "Skip-Tooth" Band Saw *cuts faster, lasts longer.* It has the regular Starrett hard edge, flexible back construction, permitting higher speed sawing while retaining its cutting edge. It fits any band saw machine. The Starrett "Skip-Tooth" Saw is good for a whole lot of clean, high speed cutting. Use it until it's worn out. Then put in another one. No resetting or resharpening expense.

Try this new saw. See for yourself how it performs and why it means *more cuts per saw at lower cost per cut.* Ask your mill supply distributor for *Starrett* "Skip-Tooth" Band Saws.

Now, with Two Service Stars

THE L. S. STARRETT CO., ATHOL, MASSACHUSETTS, U. S. A.

World's Greatest Toolmakers

STARRETT

PRECISION TOOLS • DIAL INDICATORS • GROUND FLAT STOCK
HACKSAWS • METAL CUTTING BANDSAWS • STEEL TAPES

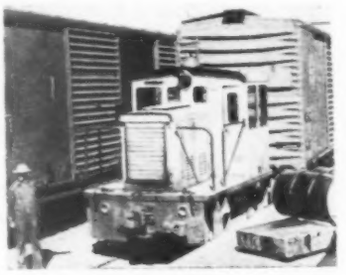
(*Continued from page* 164)

The unloading crew brings in an empty skid on a conventional hand truck. The skid is loaded by hand, pulled into the receiving room, set down just inside the door, picked up by the Power Truck and transported to destination. A typical load is die-cut and ready printed blanks for cigarette cartons, in bundles weighing 55 pounds and containing 500 cartons each. An average skid load consists of 70 bundles, or 3850 pounds.

* * *

INCREASED CAR HANDLING AT LOWER OPERATING COST

When this G-E 23-ton diesel-electric switching locomotive replaced a 12-ton gas unit in the shipping yard of the Tidewater Associated Oil Company's Avon, California, refinery, it multiplied the number of cars that could be handled



GE 23-Ton Diesel Electric

at one time by four. When a sharp increase in plant activity necessitated 16-hour switching service, the new unit took the double shift in stride. Although the tonnage of the diesel-electric is practically double that of the old locomotive and the amount of work to be done much greater, operating costs are less; namely, $2.26 per hour including engineer and brakeman, as compared to $2.39. Built by General Electric, this 23-ton locomotive is typical of a complete line of the most modern locomotives used in hundreds of industrial plants to increase the speed, efficiency, and economy of intraplant handling of materials.

* * *

NEW PLASTIC DEVELOPED BY du PONT

A new plastic known as polythene which is expected to find wide post-war application in the construction of television sets and other electronic apparatus was announced recently by Dr. F. C. Hahn, of the Plastics Department of E. I. du Pont de Nemours & Company.

He disclosed that this plastic may be applied by the flame-spraying method previously used to apply coatings of metals. Films of polythene are tough and highly impermeable, he said, and when applied over metal surfaces provide a high degree of protection against brines, chemicals, and other corrosive materials.

Dr. Hahn's paper on "Some Physical and Chemical Properties of Polythene," prepared in cooperation with M. L. Macht and D. A. Fletcher, also of du Pont's

(*Continued on page* 170)



The improved KRON springless ball-bearing dial mechanism is industry's secret weapon in the war against *hidden losses* in production weighing operations. Designed to determine true weight quickly and accurately in a simple "load and look" procedure, it saves materials, conserves time and eliminates mistakes.

Precision-engineered around this unique dial mechanism, every KRON scale is reliable, fool-proof—assures unfailing accuracy and durability under all conditions of use. It provides the full capacity to weigh, count, measure and batch with an irreducible minimum of lost time and waste motion.

If you have a materials handling problem in high-cost weighing, investigate the benefits of reliable, long-life KRON scales. Write to The Yale & Towne Manufacturing Company, Philadelphia Division. Philadelphia 24, Pa., for your copy of the new catalog of KRON scales made by Yale.



. . . FULL VISIBILITY ASSURED!

Found only on KRON scales, the exclusive swivel dial head assures full dial chart visibility for accurate readings—eliminates point-of-view differences. Dial head can be rotated through a complete 360° arc at will.



KRON INDUSTRIAL SCALES

FOR WEIGHING, COUNTING, BATCHING, MEASURING, TESTING

MATERIALS HANDLING MACHINERY: TRUCKS—HAND-LIFT AND ELECTRIC · HOISTS—HAND AND ELECTRIC



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PLANTS IN 25 CITIES . . . OFFICES EVERYWHERE

MAZDA LAMPS FOR SEE-ABILITY

WESTINGHOUSE PRESENTS JOHN CHARLES THOMAS • SUNDAY 2:30 EWT., N.B.C. ★ TED MALONE • MON., WED., FRI. 10:15 EWT., BLUE NETWORK



Tough coats for Electrodes...

LONG LIFE FOR LAMPS

Sealed in each end of a fluorescent lamp is a coil of finely drawn tungsten. These coils are coated with a special material which emits billions of electrons. The electrons bombard the mercury vapor . . . and also the coating on the coils.

How long and efficiently the coils will function depends on how well the coating withstands such bombardment.

Persistent Westinghouse research has developed an electronic emission coating of extraordinary efficiency. Not only does it supply a high quota of many billions of electrons per second, but it also is extremely tough, thus gaining capacity to stand up in service, giving hour after hour of efficient light.

And that's why, when you order fluorescent lamps, it pays to ask for Westinghouse. Your Westinghouse dealer can supply you right now for essential war lighting . . . and also to a limited extent for essential civilian use. Westinghouse Electric & Manufacturing Co., Bloomfield, New Jersey.

HELP SHORTEN THE WAR . . . BUY MORE BONDS THAN BEFORE!



LENOX
HACK SAWS
BAND SAWS

Hundreds of shops where metal cutting is an important part of their operations have found LENOX BLADES in their Plaid Boxes the answer to their problems.

There is the right blade for every job in the complete LENOX Line.

If you have metal cutting problems and have not tried LENOX we suggest that you see our Distributor in your territory.

He will serve you promptly and we know that you will okay the results.

THERE IS
NO SUBSTITUTE FOR
LENOX QUALITY

Carried by selected Distributors from Coast to Coast. See yours today.

American Saw & Mfg. Co.
Springfield, Mass.

LENOX
HACK SAWS
BAND SAWS
"The Blade in the Plaid Box"

(*Continued from page* 166)

Plastics Department, was presented at a session of the Division of Paint, Varnish and Plastics Chemistry, American Chemical Society.

Polythene is the generic name that has been given to the new series of hydrocarbon plastics now being produced on a commercial scale in this country from ethylene gas under high pressure. Ethylene may be derived from coal, petroleum, alcohol, or natural gas. Under the extremely high pressures employed, small molecules of the gas unite like a chain of paper clips to form the solid plastic.

"Polythene possesses a truly remarkable combination of the electrical, physical, and chemical properties needed for a wide variety of industrial uses," Dr. Hahn pointed out. "In addition, its versatility as regards methods of working also contributes to its suitability for a number of applications. It may be formed into films, sheets, tubes, rods, tapes, and filaments. It may be easily molded by compression or by injection in any of the standard commercial machines.

"The commercial production of polythene in this country," Dr. Hahn said, "was entirely a war-time development for military uses, and, except for small quantities that are available for experimental purposes, current production is under allocation by WPB. The military applications of polythene are chiefly in the insulation of cable and high-frequency accessories. Even before the war its uses in electronic devices were progressing from the experimental to the commercial stage, and there is no question that the material will be widely used in the postwar development of television and high-frequency communication systems.

"In addition to its highly specialized uses on electrical apparatus, polythene is well adapted to such industrial items as containers for a wide variety of materials, since it is impermeable to water and resistant to chemicals and solvents.

"The low moisture-permeability of polythene suggests its application in the packaging field, as containers for various materials, including collapsible tubes for foods and cosmetics. In laboratory tests, a hand cream has been aged in polythene tubes under standard room conditions for as long as two years without apparent stiffening or loss of fragrance.

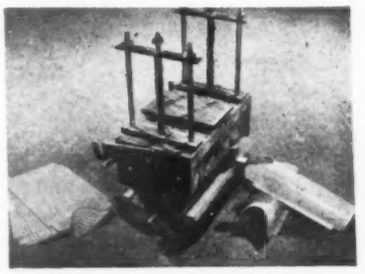
"In view of potentially low cost, polythene should also find application in the preparation of upholstery fabrics, and for ladies' handbags and shoes. Because of its moisture-resistance, toughness, light color and low costs, and since it can be easily and cheaply extruded, polythene offers distinct possibilities in the manufacture of woven furniture.

"The extremely good water-resistance of polythene indicates its suitability for the coating of cloth, paper and wood. It should prove of value also in the impregnation of paper containers for milk and other liquids. In addition, because of its toughness, impermeability, and resistance to brines and chemicals, it should also find application, when available for civilian uses, as coating for various metals to prevent corrosion."

FORMICA LAMINATED PLASTIC FORMING BLANKS

A new development believed to have tremendous postwar applications in the use of laminated plastic material manufactured by the Formica Insulation Company, Cincinnati, Ohio, has been the product of wartime ingenuity and research.

Cut blanks of laminated Formica go into a forming press. When these pieces of sheet come out they are formed in ammunition chutes for bombers.



Formica Forming Blanks, forming fixture and finished parts.

Heretofore when it was desired to shape Formica, it was necessary to build molds to mold the material to shape.

The engineering department at Formica with cooperation of some aviation engineers employed in the factories making the big bombers, discovered that the cured sheet could be heated up to a temperature just under the blistering point, and if stamped quickly, could be formed to a shape.

Continued experiment demonstrated that the formed shape could be maintained.

The press used in the technique has inexpensive dies made of wood or Progwood, one of the Formica wartime laminated plastic products which is used for airplane propellers. The forming press operation is done quickly and simply.

EXPLOSION-PROOF STORAGE BATTERY

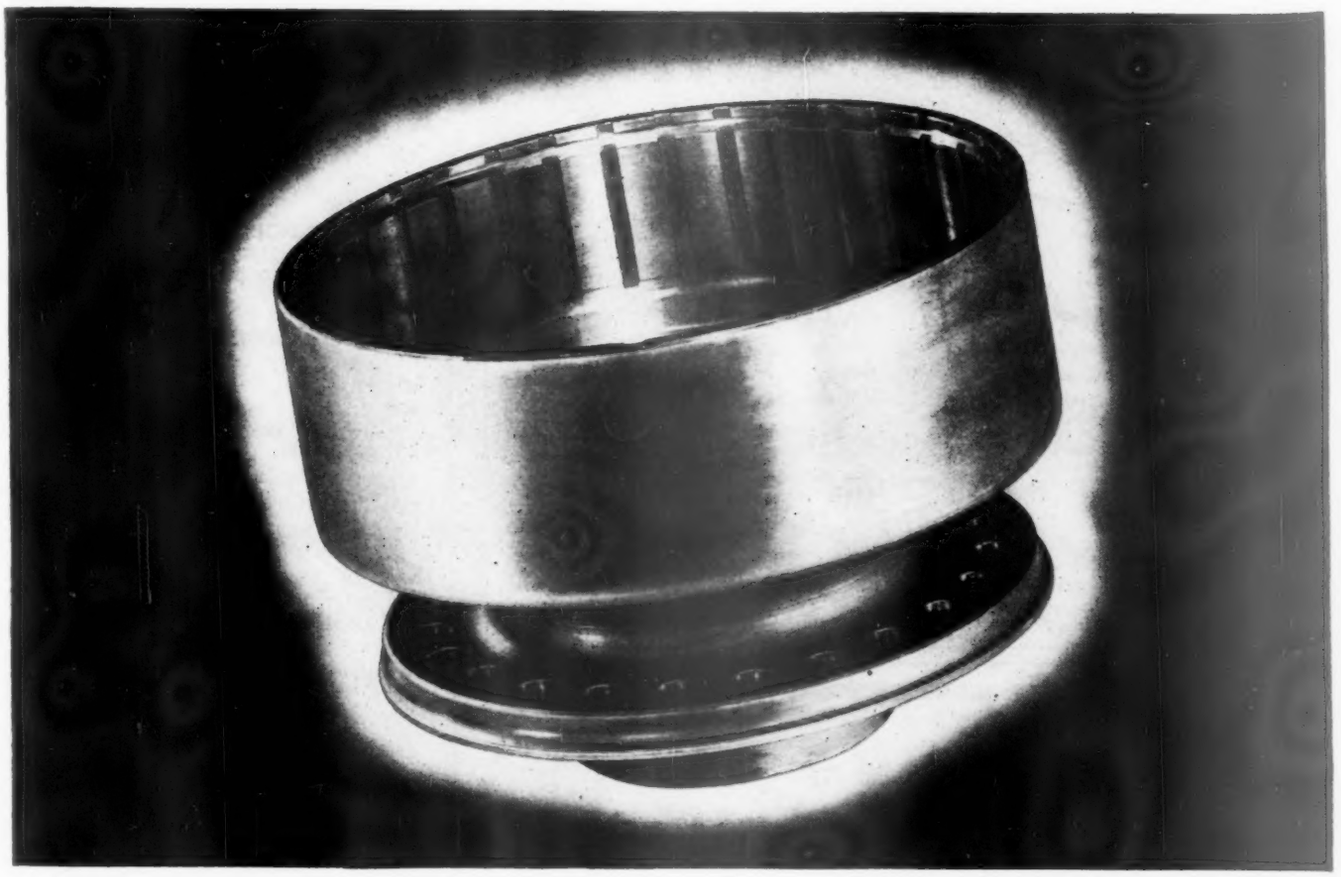
Development of an explosion-proof storage battery which the Navy Department designed and worked with the Philco Storage Battery Division to put into mass production for urgent war uses, was announced recently by M. W. Heinritz, vice president in charge of the Storage Battery Division of Philco Corporation. It has been predicted that use of this new type of battery in electric industrial trucks will revolutionize current methods of material handling in government depots and manufacturing plants where any fire or explosion hazard exists.

"The design of the explosion-proof battery is such that after the industrial truck in which it is used leaves the battery-charging station, all of the component parts are locked shut and cannot be opened until the truck is returned to the battery-charging station after completing its duty cycle," Mr. Heinritz explained.

"The design of the explosion-proof battery compartment is new, novel and unique. Any storage battery normally

(*Continued on page* 172)

This forging helps cut 17 lbs. from the weight of an airplane starter





Weight reduction of any airplane part is a direct contribution to speed and efficiency, yet it must be done without sacrificing strength and stamina.

Through improved design and judicious choice of materials, Jack & Heintz, Inc., of Cleveland, were able to produce a starter weighing 17 lbs. less than previous models, yet even more durable and dependable.

One of the important contributing factors was the use of drop-forged starter bases . . . forged by Phoenix. Formed in closed dies under repeated blows of the mighty forging hammer, the metal takes on added strength through controlled grain flow. As a result, wall thicknesses can be reduced and excess metal eliminated without sacrifice of rugged strength.

Production economies are also effected by the use of Forgings by Phoenix. Since they can be held to close tolerances, machining is reduced to a minimum, resulting in important savings in man-hours. The advantages of Forgings by Phoenix are equally important to peacetime products and you'll find it to your advantage to discuss your postwar plans with a Phoenix engineer. Write today. There's no obligation.

Forging Division of

PHOENIX MANUFACTURING COMPANY

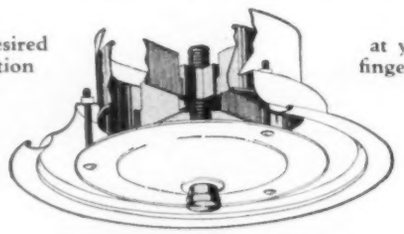
CATASAUQUA PENNSYLVANIA

Forgings by **PHOENIX**

KNO-DRAFT

PROVIDES MAXIMUM EFFICIENCY THROUGH CONTROLLED AIR DIFFUSION

Any desired condition



at your finger tip

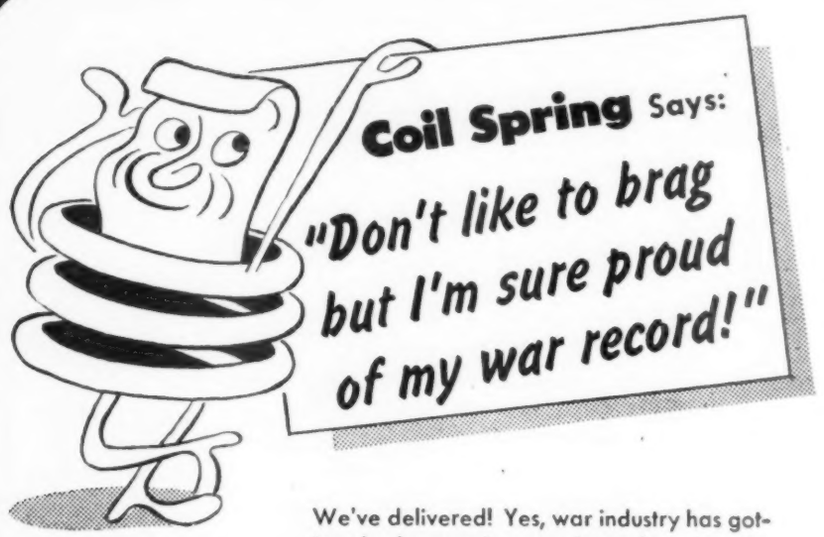
KNO-DRAFT Type K Adjustable Air Diffuser with Type D Volume Damper. *Patented.*

All Kno-Draft Air Diffusers are also equipped with *air direction* adjustment to suit seasonal or individual requirements. Their engineered design insures more effective room air mixing, more uniform room temperature and controlled, noiseless, draftless air diffusion at low cost.

Write for descriptive folder.

W. B. CONNOR ENGINEERING CORP.

114 East 32nd Street — New York 16, N. Y.



We've delivered! Yes, war industry has gotten the best springs we know how to produce . . . on *time!* Quality, dependability and strict adherance to our customer's specifications has been our performance record. We'll continue this type of work for the duration and long after!

EXTENSION ★ TORSION
FLATS ★ COMPRESSION
WIRE FORMS

THE U.S. STEEL WIRE SPRING CO.

7800 FINNEY AVE. • MICHIGAN 6318 • CLEVELAND

(*Continued from page* 170)

dischargs a certain amount of gas during its duty cycle, and the construction of the explosion-proof compartment is such that an air cylinder discharges into the space above the battery itself at a predetermined rate so that as the air and gases from the battery exhaust to the atmosphere, the mixture will be so diluted as to be non-combustible.

"In order that the entire assembly will be foolproof, the design is such that when the locking handle on the battery compartment lid is thrown to the open position, electric switches disconnect electrically the battery from the truck or truck motors."

FLAMEPROOF RUBBER COATED GLASS CLOTH

Designed to solve several major problems which have faced the aircraft industry in combat planes, a new glass, flameproof, synthetic rubber coated cloth has been developed by the United States Rubber Co. Great tensile strength at abnormally high temperatures, extreme lightness in weight and high tear resistance are its main features. In addition, it is fireproof, gasoline-proof, oil-proof, greasproof, waterproof, mildew and insectproof, and not affected by acids or alkalis. It is being used for sealing joints in metallic hot-air ducts. The single coated cloth weighs 5 oz. a square yard, and finished weight of double coated glass cloth is 7.6 ounces a square yard. The cloth is made in a variety of gauges from .006 to .040 and in tensile strengths from 165 to 800 pounds an inch.

NEW CONCRETE DEVELOPED

Northwestern University Engineers, Chicago, Ill., are reported to have discovered a new type of concrete which is stronger than steel and lighter than aluminum. Developed as a substitute for structural steel columns the concrete is compressed in a spiral of steel wiring and costs only one-third as much as steel, it is stated. Secret of the great strength of the concrete is declared to lie in the fact that only a fifth of the customary amount of water is used, this being made possible by a special process of vibrating the concrete while it is being mixed.

PLASTICS DYE COMES IN POWDER FORM

Water dye in powder form, for plastics, named Kriegr-O-Dip W is being introduced by the Krieger Color & Chemical Co., Hollywood, Calif. It is said to contain all the necessary ingredients for a perfect dye job, that is, washing, polishing, and mordanting the plastic. Dye must be heated in a vat, and temperature maintained at 160 deg. to 170 deg. F. while the articles are being dyed. Extruded, molded and fabricated parts can be dyed with the formula without crazing, etc., it is said.



DEDICATED TO RESEARCH

DURING the first week of October, this doorway to the Whitemarsh Research Laboratories officially opened, and the new home of Penn Salt's Research and Development Department was formally dedicated.

Here will be continued the important work of Penn Salt's rapidly growing staff of chemists, engineers and other technologists. With greatly enlarged facilities, they will be well-equipped to bear a substantial share of the increased responsibility imposed on industry by wartime's fast changing economy. Materials, not even dreamed of yesterday, already have become commonplace. And still more remarkable things are in store for the world of tomorrow.

This great building symbolizes the transformation that is taking place in the field of practical research.

PENNSYLVANIA SALT
MANUFACTURING COMPANY
1850 *Chemicals* 1944
1000 WIDENER BUILDING, PHILADELPHIA 7, PA.
New York • Chicago • St. Louis • Pittsburgh • Cincinnati • Minneapolis • Wyandotte • Tacoma

FORWARD TO A BETTER FUTURE WITH RESEARCH

Penn Salt products enter into the manufacture of chemicals for agriculture, water and sewage, metal industries, ceramics, glass, oil refining, pulp and paper, textiles, leathers, laundry and dry cleaning, aviation gasoline.

Among the ASSOCIATIONS

CLOSER PRICING ON WAR CONTRACTS

Purchasing Agents Key Men in Program—Occupy Strategic Position In War Time Pricing and Production and Postwar Operations

"The invasion of Normandy was tough and terrible but in the opinion of many it will hardly bear comparison with what's to come," declared Col. Fred C. Foy, Director of Purchases, U. S. Army Service Forces, Washington, D. C., at the September 13 meeting of the Purchasing Agents Association of Buffalo. "We lost 1750 Jeeps, we used 83,000 miles of field wire, had to replace 3225 planes, used ammunition at the rate of 150,000 tons a month and used 44 million gallons of aviation gasoline," he said. "These are only spot figures, but they will help you to appreciate the supply job that must still be done, with 'high resistance' just really starting," he continued.

"As you well know, there is still a big production job to be done. The present undelivered value of War Department prime contracts is in the neighborhood of 35 or 36 billion dollars and industry will have to carry out a very large procurement program of its own in order to fill these orders.

"Because it is an established fact that approximately 50 cents of every dollar expended in prime contracts by the War Department are in turn spent by prime contractors with subcontractors, you can grasp the important part played in the procurement program by company purchasing agents.

"Purchasing Agents are the key men in the program for closer pricing on War Department contracts. For while the War Department is doing business with some 100,000 prime contractors you are doing business with many times that number of subcontractors. You are the men we must depend upon to watch the purse strings at the points we cannot reach."

Realistic Pricing Needed

Conversion is over, he said, and renegotiations will shortly pass out of the picture, and business has now arrived at the phase of Realistic Pricing. War manufacturers are now making Known Items, Can Establish Efficient Normal Production Requirements, Can Gear Facilities to Circulated Demand, Can Price Competitively, Manpower is allocated, and Materials are Available. Manufacturers should now know costs so well, that realistic pricing is a distinct possibility, he declared.

"Our philosophy on purchasing is that sound pricing is a 'must' for efficient production," he said. "The company with the low price has to 'scratch gravel' to reduce its dollar expenditures to make a profit. And these cost reductions mean efficient operations.

"The War Department's drive for close



Colonel Fred C. Foy
Director of Purchases, U. S. Army Service Forces

pricing is closely related to usual purchasing methods. We are endeavoring to secure close prices through adequate negotiations—negotiations with sufficient information on the table to form the basis for intelligent action on the part of both parties. That means that the emphasis is on getting a good price on a sound business basis. The army's buying program is not a price-fixing operation. It does not depend on any wide use of mandatory orders or of a repricing statute. Title VIII of the new Revenue Act. The extent to what we use these powers will be determined by business itself.

"Long-run pricing is just as difficult under subcontracts as in Army purchasing. If your company has a prime contract with a price adjustment provision, you can make similar arrangements with your subcontractors."

Col. Foy said that the increased emphasis on the effects of pricing on production means that the program for close prices is not merely a substitute for renegotiotion, saying "We have wanted to use renegotiation in the past as a support for close pricing."

"We feel that the Army and industry

(*Continued on page* 182)

SPECIAL FORUM MEETINGS AT PHILADELPHIA

Commencing in September, the Purchasing Agents Association of Philadelphia inaugurated a series of three forum meetings devoted to related subjects on termination of war contracts, as covered by the University of Pennsylvania, Wharton School War Contract Termination Course. The purpose of the series is to cover the Purchasing Agent's problems in contract terminations from the cutback to the final settlement of all claims. The subject for the first meeting was "War Contract Termination," speakers Edward W. Carter, Wharton School, and F. T. Steiner, Air Corps, who is chairman of the Joint Agency Committee for Termination training. The subject for the October meeting is "Termination Inventory and Surplus Property Disposal," and for the November meeting, "Accounting Principles and Procedure of War Contract Termination."

George P. Comer, economic advisor of the Anti-Trust Division, Department of Justice, and Advisor to the Senate Subcommittee on Post War Industrial Policy, spoke on "What Are We in for Industrially?" at the September 14 meeting which was held in the Bellevue-Stratford Hotel.

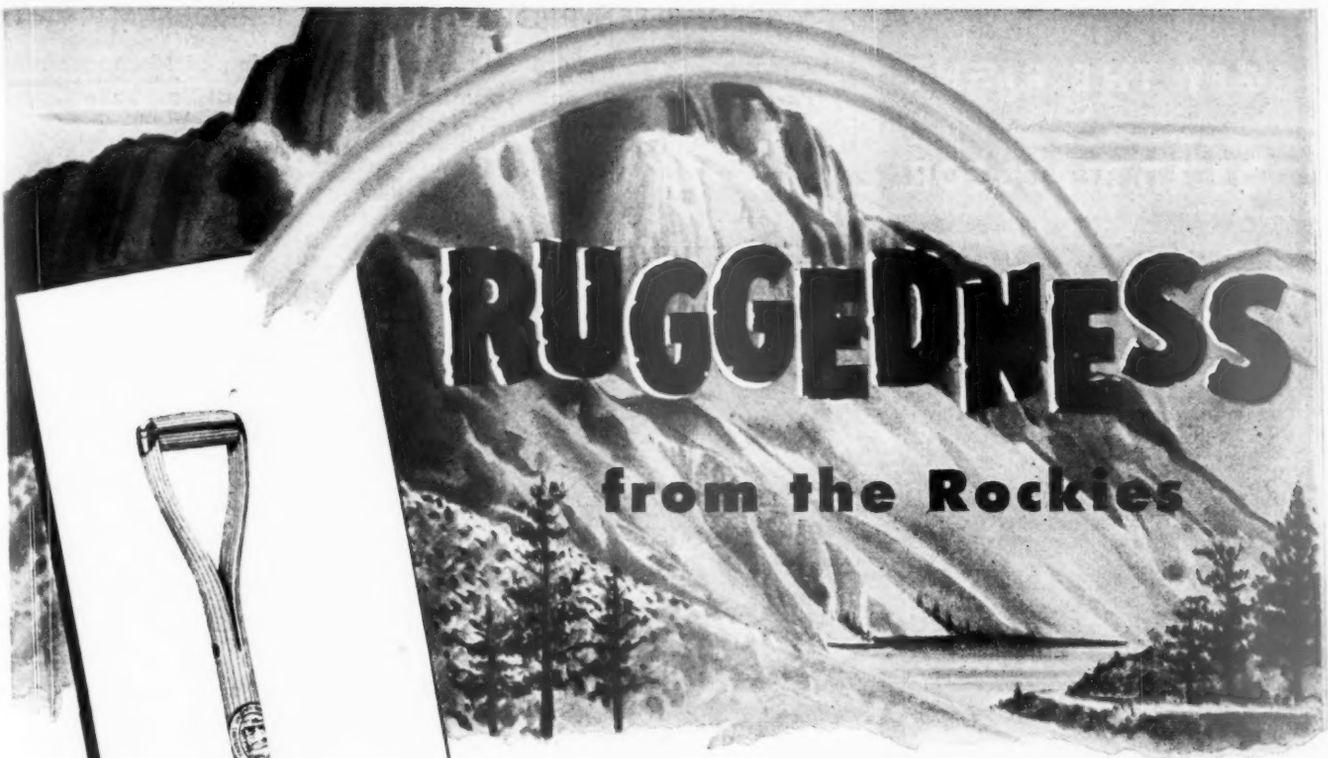
Since the May meeting, the association has elected 21 new members.

* * *

BIRMINGHAM ADMITS 11 NEW MEMBERS SINCE JUNE

The Purchasing Agents Association of Birmingham, Ala., has taken in eleven new members since June, 1944, according to President George L. Wilson. Seven of these were welcomed at the luncheon meeting of the association held in the Redmont Hotel, Birmingham, on September 8. These include A. J. Sutherland of the Reynolds Metal Co., Sheffield, Ala.; James R. Cornic of the City Board of Education; R. C. Henderson of the Boothton Coal Mining Co., Aldrich, Ala.; V. R. Ferguson of the Standard Forge & Axle Co., Montgomery; W. T. Ingramam, Alabama Polytechnic Institute, Auburn; H. F. Warren, Pullman Standard Car Manufacturing Co., Bessemer; and Charles A. Wall, Caldwell Foundry & Machine Co., Birmingham. H. E. Cross, Purchasing Agent for the Sloss-Sheffield Steel & Iron Co., Birmingham, is chairman of the membership committee. The association's winter schedule of meeting calls for one luncheon meeting and one night meeting monthly.

(*Continued on page* 176)



MAKES WOOD'S Moly SHOVELS
OUTWEAR ALL OTHERS!



Illustrated: Moly Closed-Back Moulders Shovel—with Steel I-Beam Handle Reinforcement.

Magic Mo-lyb-den-um, the miracle mineral mined in the Colorado Rockies, gives Moly Shovels, Spades and Scoops a rugged toughness that even outwears that of the granite peaks among which Mo-lyb-den-um is found.

Moly Shovels, Spades and Scoops, with blades of Mo-lyb-den-um alloy steel made to Wood's own special analysis, have won world-wide reputation . . . have earned exclusive world rights to the name Moly.

Buy these stronger, tougher shovels and watch your shovel costs go down, down and down. Moly means more wear . . . Moly shovels are unconditionally guaranteed to outlast, out-wear all others.

THE WOOD SHOVEL AND TOOL CO.
PIQUA, OHIO

A National Organization Specializing *Exclusively* in Shovels, Spades and Scoops.

Moly
REG. U.S. PAT. OFF.

MO-LYB-DEN-UM ALLOY SHOVELS

GET THE RIGHT
STAR BLADE FOR



Hand Hack Saw Cutting of

ALUMINUM	METAL TRIM
BRASS	PIPE TUBING
CONDUIT	SHEET METALS
COPPER	SOFT STEEL
DRILL ROD	STEEL PIPE
HARD ALLOYS	THIN TUBING
LIGHT ANGLES	THIN METAL WALLS

TOOL STEELS

Power Hack Saw Cutting of

BRONZE	PIPE
CAST IRON	RAILS
HARD ALLOYS (Med. Dia.)	SOFT STEEL
HARD ALLOYS (Large Dia.)	TOOL STEEL (Large Dia.)
HEAVY ANGLE TRIM	TOOL STEEL (Med. Dia.)
IRON PIPE	TUBING
LIGHT ANGLES	WROUGHT IRON

Band Saw Cutting of

ALUMINUM	DRILL RODS
BRASS SHEETS	IRON SHEETS
BUILDER'S BOARD	METAL WOOD
CAST IRON	MONEL SHEETS
COPPER	PIPE

ZINC



This metal cutting book tells you the proper selection and use of Hand and Power Hack Saw Blades and Flexible Back Band Saws for the materials you cut. Send for your copy. Clemson Bros., Inc., Middletown, N. Y.

*T. M. Reg.—Blades bearing the name "MOLY" are made only by Clemson Bros., Inc., and affiliated companies.

CLEMSON

Makers of Hand and Power Hack Saw Blades, Frames, Band Saws, and the Clemson D-17 Lawn Machine.

3229

CIVILIAN PRODUCTION NO. 1 PROBLEM

Secretary George Renard Addresses Joint Meeting of Manufacturers, Purchasing Agents and Chamber of Commerce at Salt Lake City

Members of the Utah Purchasing Agents Association were hosts to Secretary George Renard of the National Association of Purchasing Agents, and Mrs. Renard, at Salt Lake City, August 28th and 29th, keeping the amiable secretary busy with interviews, sight seeing and peace. If Purchasing Agents plan their purchases, sales and production successfully over the next several months, that will be an important phase of successful postwar planning. We must get our heads out of the clouds and cut through the psychological barrage. The payoff



Claude Wheat, Mountain Fuel Supply Co., President Utah Association. George A. Renard, Secretary National Association, and John F. Hopkinson, Utah Poultry Producers Association, National Director.

interviews. At a joint luncheon meeting of the Utah Manufacturers Association, Chamber of Commerce and the Purchasing Agents Association, which was attended by more than 200 guests, Mayor Earl J. Glade formally welcomed Secretary Renard, and commented upon the tremendous burden that industry places upon the Purchasing Agent.

Secretary Renard addressed the meeting on the important subject of industrial reconversion incident to present-day conditions and the winning of the war, and the Purchasing Agent's role therein. Mr. Renard ridiculed the opinion expressed by some "brass hats" that any effort to make civilian goods before the war is ended is coddling the public. He declared that a miracle of production is all that saved us from disaster in the last two years, and that another miracle of peacetime production is the only thing that can save us from disaster in the next few years.

"While planners plan for peace, some of them see a boom and some of them see a 'bust,'" he said. "We were a long time planning for war before there was an unconditional attack, and I believe we can travel a long way toward peace before there is an unconditional surrender. It is our job to play the string out. The army and the navy must take no chances, but we must also be flexible for we are headed toward the end of the war in Europe and whatever that brings. So while others organize to plan I believe each company should now be blueprinting the steps that must be taken with a gradual return to will be made on inventories and prices.

"Let's keep a strong civilian control over our industrial economy, one made up of business men not interested in politics, so we can promptly take advantage of increased supplies of materials and lessened demand for war production to rebuild our business life. War is not the only thing that required organization, hard work, sweat and tears. The period ahead requires more of the same."

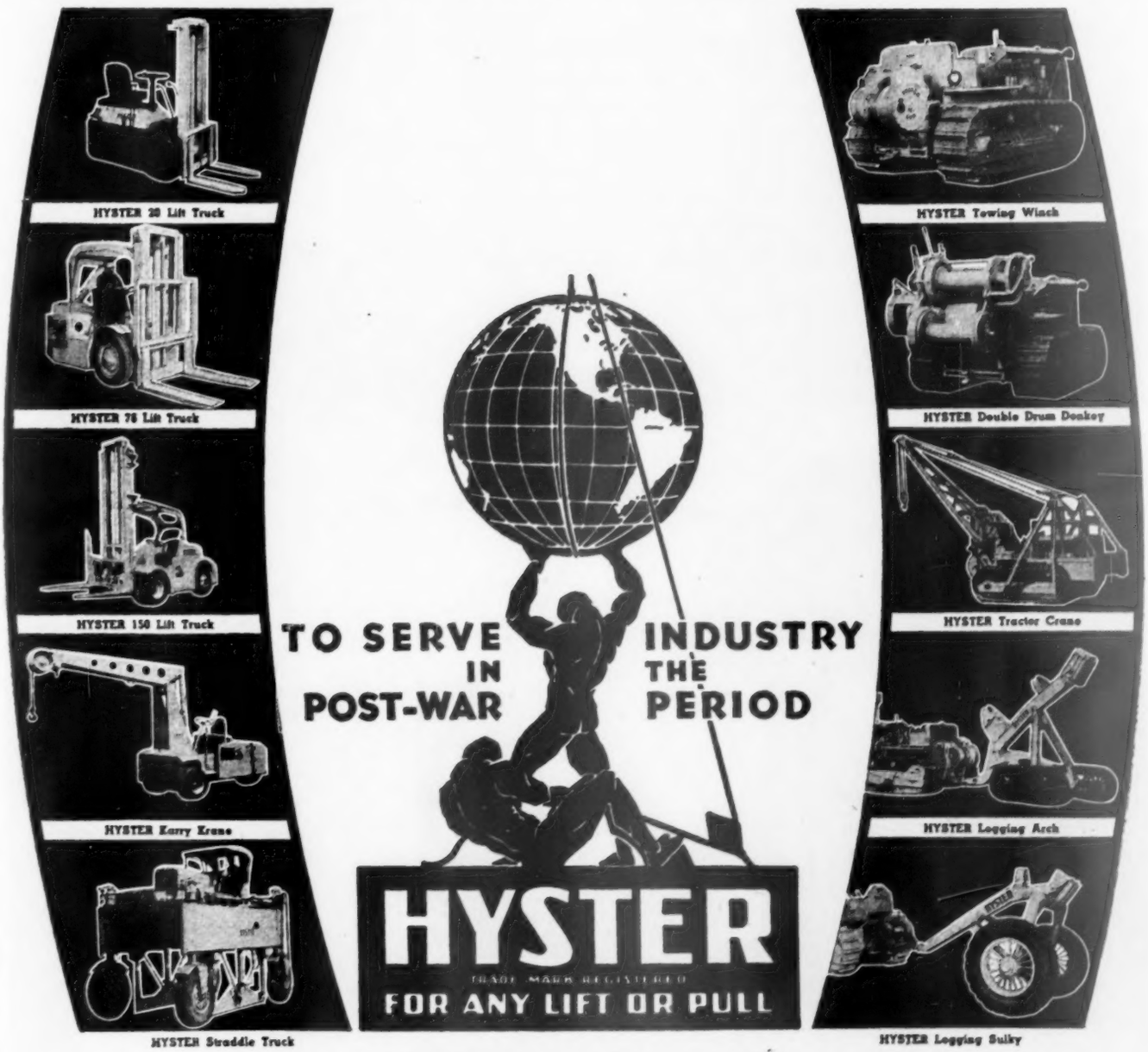
Mr. Renard stated that the changeover to civilian production is our No. 1 problem. After the last war our national debt was $25,000,000,000. At present the national debt is $250,000,000,000. After War I contract cancellations by the government were about $5,000,000,000, and they will be between $50,000,000,000 and $60,000,000,000 after this war. This means that we must get rolling right now with reconversion. He said that he believed Donald Nelson's plan for piece-meal reconversion to be sound as it will prevent pockets of unemployment which so easily spiral.

Mr. and Mrs. Renard were royally entertained by the Utah group. They were received by Governor Herbert B. Maw, visited the world famous Temple Square, traveled the shores of Great Salt Lake, visited the open pit copper mine of the Utah Copper Co., the Alta ski resort in the Wasatch mountains, and thence to Little Cottonwood canyon where they were met by approximately 40 purchasing agents and their wives for an outing.

John E. Carr reports that Mr. Renard

(*Continued on page* 178)

HYSTERS are READY with the LIFT ..... and the PULL



Pioneer manufacturers of mobile materials handling machines . . . Fork Lift Trucks, Crane Trucks and Straddle Trucks; all gasoline powered; all pneumatic tire mounted.

HYSTER Company

2978 N. E. Clackamas - Portland 8, Oregon
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BRANCH OFFICES: 221 N. LaSalle St., Chicago 1, Ill.; 90 West St., New York 6, N. Y.; 1022 Denrike Bldg., Washington 5, D. C.; 233 Ninth St., San Francisco 3, Calif.; Masonic Bldg., New Orleans 12, La.; 2724 First Ave. So., Seattle 4, Wash.; 2700 Santa Fe Avenue, Los Angeles 11, Calif.; 215 Euclid Avenue, Cleveland 14, Ohio; 211 Farnsworth Bldg., Memphis 3, Tenn.

Largest manufacturer of tractor hoists and winches . . . Built exclusively for "Caterpillar" track-type tractors. Sold and serviced by "Caterpillar" dealers everywhere.

You can see the Quality in every line of a LUNKENHEIMER VALVE

From handwheel to pipe threads a Lunkenheimer Valve reflects exceptional strength and ruggedness. Ample proportions and perfect balance of all parts are basic design features that give assurance of the good service and long life so characteristic of Lunkenheimer Valves.

Maintenance men have long since come to depend upon Lunkenheimer for the best in valve service . . . knowing they will get the highest degree of performance with the least amount of trouble and maintenance expense.

•

Lunkenheimer distributors are located in all industrial centers. Use the facilities of the one nearest you for service on your requirements.



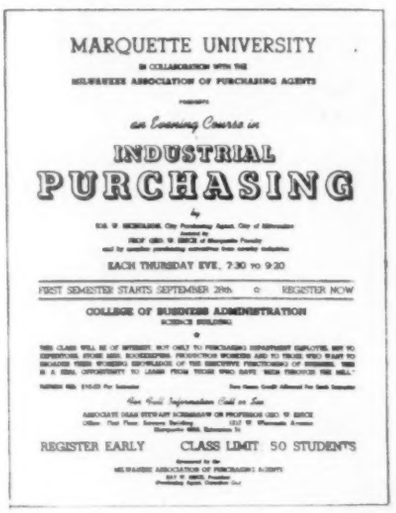
(*Continued from page* 176)

gave the members a very broad picture of conditions as they exist in the purchasing field, better equipping them to face the problems of the future.

✓ ✓ ✓

MILWAUKEE AGAIN SPONSORS PURCHASING CLASS

The directors of the Milwaukee Association of Purchasing Agents have authorized continuation of a class in Purchasing for the school years of 1944 and 1945. As before, the class is being conducted by Joseph W. Nicholson at Marquette University, with the assistance of Prof. Geo. W. Knick of the University staff and some of the best qualified members of the association. The class meets each Thursday from 7:30 to 9:30 P. M., and is open to men and women interested in purchasing principles, policies and procedures. The tuition fee is $10 per semester.


MARQUETTE UNIVERSITY

IN COLLABORATION WITH THE MILWAUKEE ASSOCIATION OF PURCHASING AGENTS

an Evening Course in

INDUSTRIAL PURCHASING

by

EACH THURSDAY EVE., 7:30 to 9:20

FIRST SEMESTER STARTS SEPTEMBER 28th. REGISTER NOW

COLLEGE OF BUSINESS ADMINISTRATION
SCIENCE BUILDING

REGISTER EARLY CLASS LIMIT 50 STUDENTS

✓ ✓ ✓

CONNECTICUT ASSOCIATION CONTRIBUTES TO RADIO FORUM

The Connecticut Forum of the air had a special broadcast on the subject "What to Do With Excess Materials." It was broadcast on August 31st over five Connecticut stations. The Purchasing Agents Association of Connecticut was asked to contribute to this program and L. A. Fagan, President of the Purchasing Agents Association of Connecticut, represented the association. Other participants in the program were H. Durkee, Regional Manager of the Redistribution Section of the WPB, Boston, Mass.; Harold Bates, manager of WPB office, Hartford, Conn.; Arthur Merry, chief tool engineer, Pratt & Whitney Aircraft Corp. The moderator was William Horowitz, first vice president of the Connecticut Association of Purchasing Agents. W. J. Roemer, second vice president of the association, states that the program was very well received and comparable to some of the forums that are held over national hookups.

SHORTS STYMIED

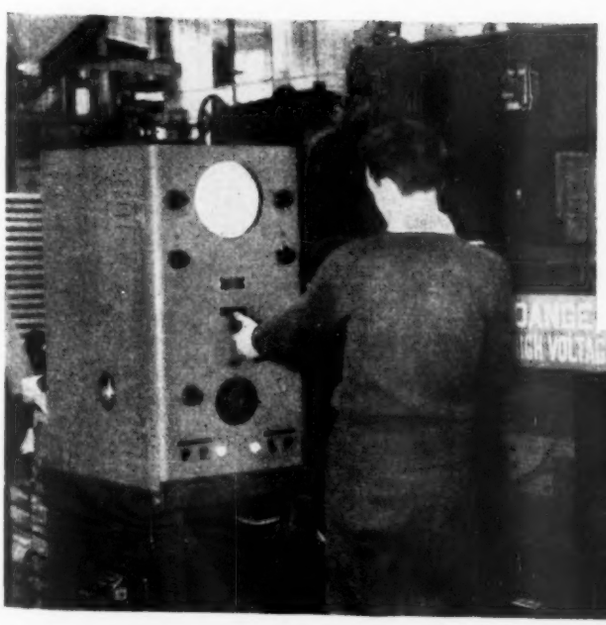
Voltage surges which accompany switching and frequent starting and stopping of motors impose high dielectric stresses on the coil insulation, and can cause harmful short circuits. Yet this is an unavoidable condition of service for many motors.

The grinder shown here, for example, starts and stops every time a finished part is removed and a new part inserted. But the two Tri-Clad motors that drive it have been built to withstand safely the voltage surges ordinarily encountered in this type of service. Their ability to "stymie" shorts was proved by *the new General Electric test* described below.



External grinder, equipped with two Tri-Clad motors, installed in the milk-machinery manufacturing plant of the Rite-Way Products Company, Chicago, Ill.

New high-potential, electronic surge-tester verifies strength of TRI CLAD motor windings



This electronic test of insulation makes a "cardiogram" of every Tri-Clad motor winding, ferreting out weaknesses that might lead to shorts caused by voltage surges in service. It tests each turn, coil, and phase group of the windings for adequate insulation strength to withstand the "steep front" high-voltage surges of actual service. First developed and applied by G.E., it's one of the production tests which all Tri-Clad motors must pass as they come off our production lines. – *General Electric Company, Schenectady, N. Y.*



GENERAL ELECTRIC

TRI CLAD MOTORS

Each week 192,000 G-E employees purchase more than a million dollars' worth of War Bonds.



STRAIGHT-WAY



THREE-WAY



FOUR-WAY

You Get

INSTANT ACTION

POSITIVE CONTROL

LOWER UPKEEP

LONGER SERVICE

with HOMESTEAD Quarter-Turn Valves

INSTANT ACTION because a Quarter-Turn *fully opens* or *closes* these valves. They operate 16 to 28 times *faster* than screw-stem types.

POSITIVE FLUID CONTROL because cam presses seating surfaces firmly together in closed position, yet valve operates freely. Sealed bottom, bonnet and stem, prevent wasteful, outside leakage.

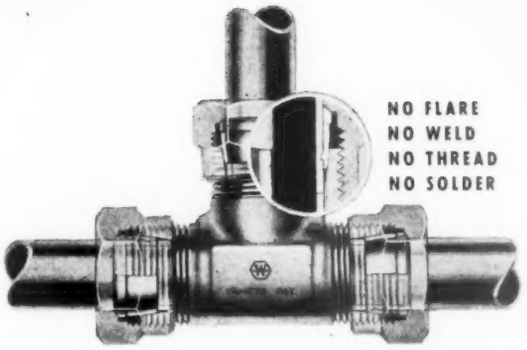
LOWER UPKEEP AND LONGER SERVICE because seating surfaces are protected in the closed position and turned completely out of the fluid path in the open position. Thus shielded from corrosion or erosion by fluids, longer life is assured.

HOMESTEAD QUARTER-TURN VALVES are made in sizes, types and metals for most of your valve needs; for pressures to 3000 pounds and temperatures to 750 degrees F. Consult our engineering department for special valves designed to your own specifications. Write for copy of Valve Reference Book No. 38.

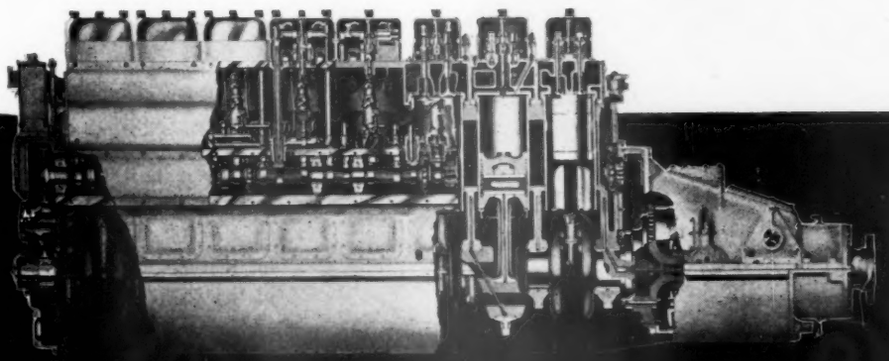
Maritime's two-flag, highest production award to our men and women making valves for the Victory Fleet.

HOMESTEAD VALVE MFG. CO.

P. O. BOX 93 CORAOPOLIS, PENNSYLVANIA



100% equipped with the NEW *Ermeto* fittings



It is with justifiable pride that the Weatherhead Company has the privilege of announcing that the sensational new Sterling Viking Diesel Engine is completely equipped with our patented Ermeto Fitting. This remarkable fitting eliminates flaring, welding, soldering or threading and has been designed to withstand excessive vibrations for an indefinite period without losing its original tightness. This new Sterling installation is the latest honor to be given Ermeto, a fitting that has proved its value in thousands of applications of hydraulic, oil, water, gas and fuel lines.

Look Ahead with

Weatherhead

THE WEATHERHEAD COMPANY, CLEVELAND, OHIO
Manufacturers of vital parts for the automotive, aviation, refrigeration and other key industries
Plants: Cleveland, Columbia City, Ind., Los Angeles
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FLAT HEAD CAP SCREWS

They set up in a counterbored hole more truly *flush* than any other type of hollow screw. The V-head fits the counterbore with complete *closed contact* all-round. This gives frictional holding-power and rigidity of grip. . . "Pressur-formd" of ALLENOY steel, with uncut metal fibres shaped to the head.

Threads also are *pressur-formd*, with tolerances held to a high Class 3 fit. Strength and precision distinguish these screws in all their applications.

Ask your local Industrial Distributor for samples and dimensional data,—the same Allen Distributor who serves your interests with the most dependable supply-items in all lines.



THE ALLEN MANUFACTURING COMPANY
HARTFORD, ★ ALLEN ★ CONNECTICUT, U.S.A.

(*Continued from page* 178)

can take on the job of pricing without renegotiation at this stage. The Army can do only part of the job of meeting the objectives of the close pricing program. You, as industrial Purchasing Agents will have to carry out the same type of program so that in a cooperative drive we can help to lower price, increase efficiencies and handle the profit problem sensibly.

"Another major change in attitudes about purchasing is a growing feeling that pricing is a more important factor today in the control of inflation than at any other time. The effect of inflation on industrial operations during and after a war needs no description. We are all aware of the fact that a strong inflationary movement accompanied by a sharp subsequent deflationary movement develops such striking business maladjustments that only a small handful can be benefitted thereby. All business has a great stake in avoiding sharp upward and downward movements of prices. This means that the necessity for active participation by the Purchasing Agents is greater than ever before.

"CLOSE BUYING"

"Up to the present the Purchasing Agents, of prime contractors, to a large extent have had the job of locating suppliers, getting orders placed, and expediting deliveries. In many instances they have taken quite a "shoving around" from the production departments whose cry was 'speed.' And in the effort to 'get the stuff out,' close buying as Purchasing Agents know it in peacetime has fallen by the wayside to a considerable extent.

"If you fellows really go back being the same efficient buyers you were in peacetime you can do some real cost cutting where prices are too high and make a contribution that no other group is in a position to make toward reducing the cost of the war.

"The War Department hopes the Purchasing Agents will roll up their sleeves and be the same close, intelligent buyers they were when competition was keen and tough—that they will take on the job of close pricing on the important half of the government dollar their companies are spending with subcontractors.

"As to the method to be followed in arriving at a close price, you know your own problems and situations better than I, and you have your own individual ways to go about the job of analyzing costs and prices. If you find yourselves 'stymied' in your efforts to reduce a price that you think should be cut—if the contractor is not cooperative, call on us. If we have to we can swing a pretty big club in your behalf under Title VIII of the Revenue Act.

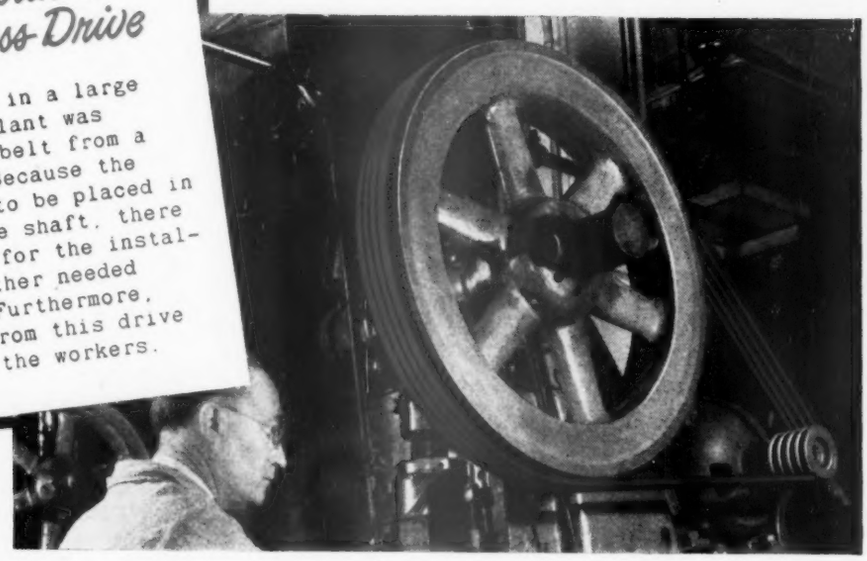
"That fairly outlines the job that the War Department is asking you to do. Just as a matter of straight business, disregarding the war, the War Department, all our combined effort to bring earliest possible victory—it's a job that you're cut out to do and trained to do and a job

(*Continued on page* 184)

DAYTON V-BELT DISTRIBUTORS GIVE EXPERT DRIVE CONVERSION SERVICE

Trouble with a Punch Press Drive

A punch press in a large mid-western plant was powered by a belt from a line shaft. Because the machine had to be placed in line with the shaft, there was no room for the installation of other needed equipment. Furthermore, the noise from this drive distracted the workers.



Perfect Conversion

The Dayton V-Belt Distributor was consulted. After studying the drive and the machine, his factory-trained V-belt expert designed a mounting for an electric motor directly on the punch-press. He installed four Dayton V-Belts from a 4" V-groove drive pulley to a 28" flat driven pulley, on 27" centers. Space was then provided for the added equipment . . . and the Dayton V-Belts now run quietly . . .

Free Service by Factory-Trained Men

All you have to do to get expert advice on any drive trouble is to get in touch with your Dayton V-Belt Distributor. His factory-trained expert will make a survey of the operation and engineer a conversion to smooth-running, hard-gripping, long-lasting Dayton V-Belts—anything from fractional to a thousand horsepower.

Every Dayton V-Belt Drive is backed by Dayton Rubber's 38 years' experience in building V-belts of natural and synthetic rubber. You can rely on Dayton V-Belts for the utmost in performance—and on Dayton V-Belt Distributors for the utmost in prompt, expert service.

CALL YOUR DAYTON V-BELT DISTRIBUTOR OR WRITE DIRECT

THE DAYTON RUBBER MFG. CO., DAYTON 1, OHIO

The World's Largest Manufacturer of V-Belts

Export Division: **DAYTON RUBBER EXPORT CORPORATION**
38 Pearl St., New York, N.Y., U.S.A. ***Cable Address:*** **WIDBLOCO**

MAINTAIN VICTORY SPEEDS—CONSERVE YOUR TIRES

V-Belts by

Dayton Rubber

REG. TRADE MARK THE DAYTON RUBBER MFG. CO.

The Mark of Technical Excellence in Synthetic Rubber

ELEK-TRO-CUT THREE-M-ITE CLOTH



A "time-saver" for your finishing department

You save time in your finishing department when you keep Elek-Tro-Cut Three-M-ite Cloth on the bench. This all-purpose abrasive fills a host of needs in applying the finishing touches by hand, to castings, stampings, and machined parts. Made with a new, improved backing, Elek-Tro-Cut Three-M-ite Cloth is flexible enough to fit snugly on sanding blocks and flexible files, yet firm enough to keep the abrasive from receding from the work. It is tough enough to give longer wear on every type of finishing, yet can be torn easily into strips of any width, with a minimum of fraying and mineral loss. The uniform aluminum oxide mineral cuts smoothly and cleanly, without wild scratches.

Elek-Tro-Cut Three-M-ite Cloth is also available in a complete range of abrasive specialty items. Write today for a copy of our booklet "3-M Abrasive Specialty Items That Aid in Speeding Production."



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MINNESOTA MINING AND MANUFACTURING CO.
GENERAL OFFICES: SAINT PAUL 6, MINN.
BRANCHES IN PRINCIPAL CITIES

Minnesota Mining & Manufacturing Company P1044
900 Faquier Avenue, Saint Paul 6, Minnesota

Please send us a free copy of your booklet, "3-M Abrasive Specialty Items That Aid in Speeding Production".

Name _____
Firm _____
Address _____
City _____ Zone _____ State _____

BUY MORE WAR BONDS!

(*Continued from page* 182)
you should get a lot of satisfaction in doing.

"The Purchasing Agents job is more important today than ever. You as a group occupy one of the most strategic positions in both our war time pricing and production and our postwar operations."

START FALL PROGRAM AT SEATTLE

Industrial, Institutional and Governmental purchasing men from various points in Western Washington gathered Thursday evening, September 14, at the Washington Athletic Club in Seattle for the opening fall meeting of the Purchasing Agents' Association of Washington. President D. P. Brewer of Seattle presided.

Featured on the evening's program arranged by Vice President H. F. Price were:

1. Arthur G. Young, Manager, Foreign Trade Department, Seattle Chamber of Commerce, speaking on "Post War Shipping and Foreign Trade."
2. L. B. Robinson, General Electric Co., speaking on "What Next in the Electrical Field?" S. E. Ringheim, Crown Zellerbach Corp., Chairman of the Association Discussions Committee, introduced Mr. Robinson.
3. Charles V. Tinker, Wm. O. McKay Co. and National Director of the Association, discussed "Recent N. A. P. A. Releases."

Prior to the evening meeting a "Priorities and Reconversion Forum" was held at 4:30 P. M. with Carl C. Nissler, local WPB analyst, as consultant and W. D. Anderson, Chairman of the Association's Educational Committee as Chairman.

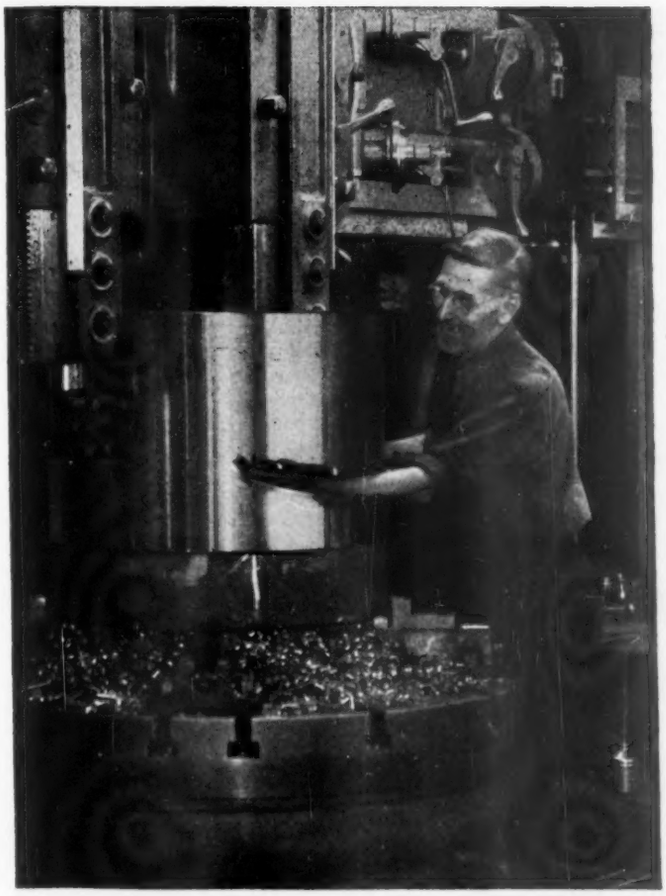
H. K. HOWE ADDRESSES TWIN CITY MEETING

H. K. Howe, Washington representative for the La Salle Steel Company, and author of the La Salle Steel Company's Washington Letter, spoke on "Current Happenings and Trends in Washington", at the September 13 meeting of the Twin City Association of Purchasing Agents held at the St. Paul Athletic Club. His talk covered such subjects as "Release of Materials for Civilian Production," "Your Business and Washington Postwar," "Postwar Planning Aids Available from Government Bureaus," and general developments in the Washington picture.

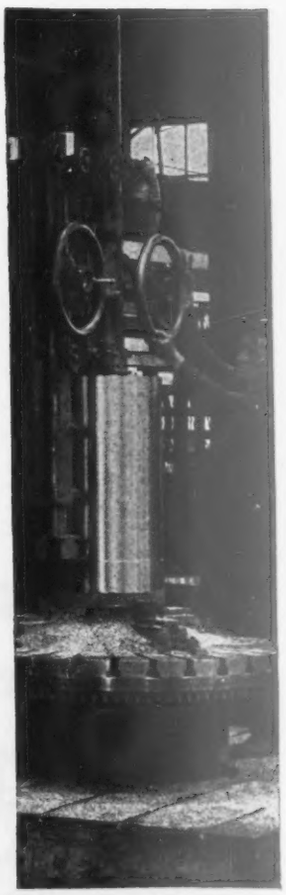
ROMANCE OF STEEL METROPOLITAN ASSISTANTS CLUB

Harry B. Williams, steel technicist, Joseph T. Ryerson and Sons, Inc., spoke on the Romance of Steel at the September 12 meeting of the Metropolitan Purchasers Assistants Club, New York, held in Midston House. Mr. Williams stated that steel is a barometer of business and that "as goes steel so goes the nation so far as business economics are

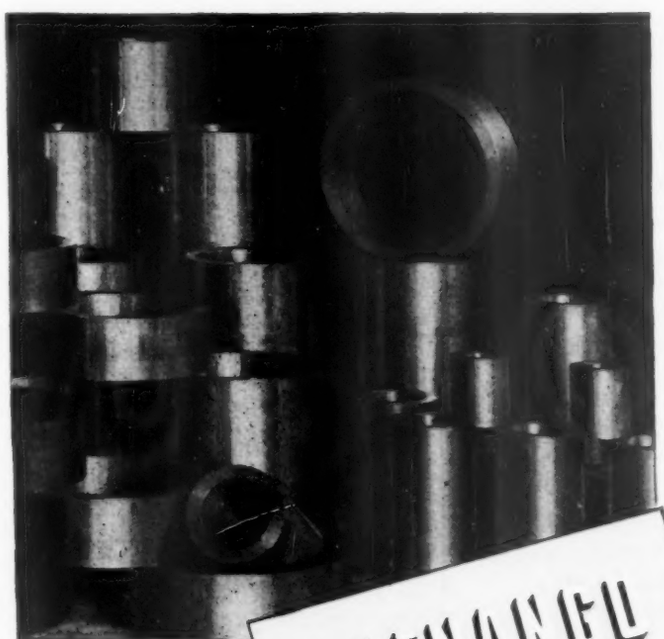
(*Continued on page* 186)



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SHENANGO-PENN specializes in centrifugal castings of bronze, iron alloys, and many special alloys of aluminum and manganese bronze, nickel silver, and other ferrous and non-ferrous metals. The density of our centrifugally cast metal makes it possible to leave a minimum of metal for finishing (sometimes as little as 1/16 of an inch in smaller castings). This means valuable savings of critical metals. Finishing costs and finishing time are also reduced.

We can help you speed production of vital parts still more with our modern machine shop, fully equipped for boring, turning, facing, honing, grooving, threading, milling, etc., as well as for all types of special work.

Shenango-Penn has pioneered in centrifugal casting and is equipped to cast tubular bars or cylinders, ranging from 2″ to 26″ O.D., up to 26 feet in length. Our products meet all Army, Navy and Air Corps requirements. Write for booklet No. 143 describing industrial applications and possible uses of centrifugal castings.

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IMMEDIATE PRODUCTION:

We have available additional capacity for the production of every type of wire strainers, filters, dipping baskets, and other wire-mesh fabricated parts, manufactured to standard or to your own specifications. Prompt delivery is assured.

The C. O. JELLIFF MFG. CORP.
22 PEQUOT AVENUE · SOUTHPORT, CONN.

(*Continued from page* 184)

concerned, due to the large number of people employed in steel production and steel using industries and the fact that steel is a huge purchaser of all kinds of materials." Steel production in 1943, he said, reached 89 million tons. The first six months of this year 45 million tons were produced. He said that some of the NE steels will remain in use after the war, this depending upon the factor of cost.

Four new members were admitted to membership at this meeting. Robert Schmidbauer, Prudential Insurance Co., Newark, N. J., is chairman of the membership committee. The entertainment committee, with John Belli, Robins Conveying Belt Co., Passaic, N. J., has about completed plans for a social meeting for members and their wives to be held in Midston House, the latter part of October.

POST-WAR UNEMPLOYMENT NEW ORLEANS

"Unemployment in the Post-War Era" was discussed by Walter M. Carter, chairman of the New Orleans Committee for Economic Development, at the September 11 meeting of the Purchasing Agents Association of New Orleans, which was held in the Jung Hotel, New Orleans. Mr. Carter is southern sales manager for the Gaylord Container Corporation.

DISCUSS MAGNESIUM-ALUMINUM BALTIMORE

Stanley H. Wilson, Sales manager of the Magnesium-Aluminum Division of the Revere Copper and Brass Corp., presented a short film on the fabrication of magnesium, and E. S. Bunn, Director of Research of the same company, answered questions from the floor on magnesium fabrication, at the September 20 meeting of the Purchasing Agents Association of Baltimore which was held at the Lord Baltimore Hotel.

THE SPOT AUTHORIZATION PLAN NEW YORK FORUM

The Spot Authorization Plan, a review and discussion of Priority Regulation No. 25, the basic authority for the production of restricted products, lead by guest speaker A. J. Touriel, CMP analyst, featured the forum meeting of the Purchasing Agents Association of New York, at the Builders Exchange Club, Tuesday, September 19. Mr. Touriel explained the procedure with form 4000, which is an application for authorization to produce restricted goods, and form 3820, statement of manpower information. Second Vice President H. W. Macintosh presided at the session.

John B. Kennedy, author, radio commentator and world traveller, spoke on "This Breathtaking War and Where Is It Leading Us" at the dinner meeting.

(*Continued on page* 190)



Sensational SQUEEZ-GRIP

This picture of the C-O-TWO Squeez-Grip valve gives a bare suggestion of the speed and simplicity of the modern use of carbon dioxide gas to extinguish fires. It shows how the gas is released by a mere pressure of closing your hand. There is no wheel to turn—that's the old slow gas wasting way. The extinguisher is carried by the valve handle—no waste motion—no need to set it down. The same hand squeezes the release lever which controls the discharge of gas, the other is free to direct the blast of sub-zero carbon dioxide to smother the fire in seconds. The speed of C-O-TWO Squeez-Grip release valve is sensational.

C-O-TWO is listed by the Underwriters' Laboratories; fully approved by Factory Mutuals and the Bureau of Marine Inspection and Navigation. C-O-TWO is a registered trade mark. To be safe, specify C-O-TWO.

Squeez-Grip Saves Gas—Saves Time—Saves Lives—It's Modern—It's Faster.

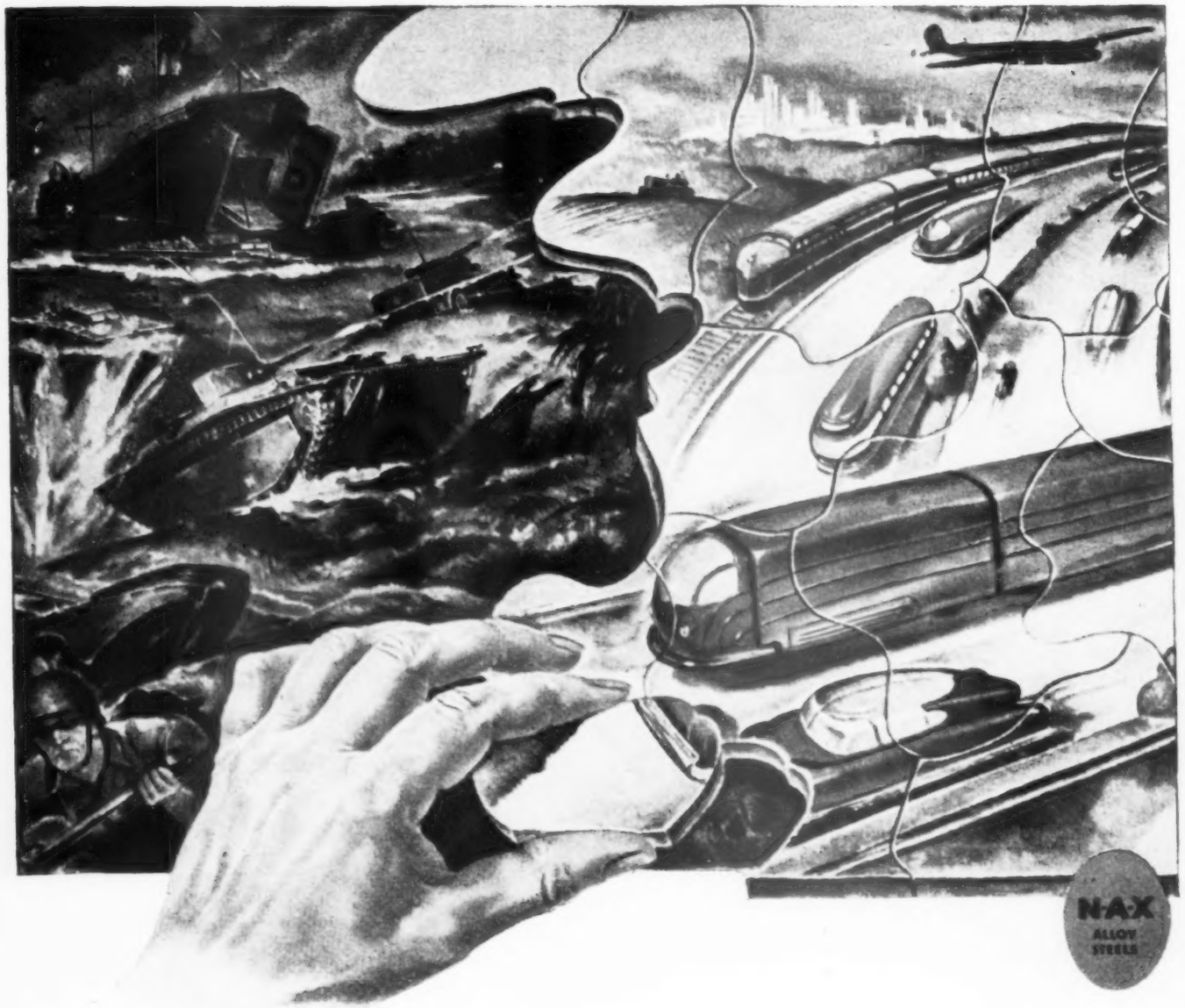
C-O-TWO FIRE EQUIPMENT COMPANY

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Sales and Service in the Principal Cities of United States and Canada

AFFILIATED WITH PYRENE MANUFACTURING COMPANY

A new picture is forming



That popular dream of tomorrow's better world is not all fantasy. Many factors that must shape it are already established—they are fitting themselves together, bit by bit, in an unmistakable pattern.

Various war perfected materials, for instance, will inevitably change the American scene. Take N-A-X HIGH TENSILE for example. Its amazing strength and toughness will certainly mean lighter weight, less bulky, more durable products of peace—more efficient, more economical planes, trains and motor vehicles—better, less expensive furniture, home appliances and other everyday items that will form our future.

N-A-X HIGH TENSILE and N-A-X 9100 SERIES STEELS are now employed in practically every type of war equipment. This wide battle application is indicative of their great versatility—their phenomenal strength, toughness and resistance to impact and fatigue—their superior formability and fabricating efficiency.

And these are the prime ingredients with which to build important parts of a new and better world.

GREAT LAKES STEEL CORPORATION
DETROIT (18), MICHIGAN • SALES OFFICES IN PRINCIPAL CITIES
DIVISION OF NATIONAL STEEL CORPORATION EXECUTIVE OFFICES, PITTSBURGH, PA.

NEED SOME LARGE SPRINGS NOW?



LARGE SIZE springs can now be supplied at a speed that will "perk up" your production schedules. Extensive manufacturing facilities at Muehlhausen are responsible, where one entire plant is devoted to hot-coiled springs.

Besides quick, quantity delivery, you get two other important advantages from this hot-coil specialization: Design of your springs by Muehlhausen engineers to best meet operating conditions; extra spring life gained by "production lab" control of all processes.

See how these springs are made—SEND FOR NEW ILLUSTRATED FOLDER ON HOT-COILING SPRINGS.

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Division of Standard Steel Spring Company
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To improve product performance, use

MUEHLHAUSEN Designed SPRINGS

DUET
2 WAY CLEANING HARMONY!

Absorbs and Washes
LIKE A SPONGE
Cleans, Dries and Polishes
LIKE A
CHAMOIS



No Other Cloth Like It!

Use WET
DAMP or DRY

"Duet" can be used wherever a Sponge is used because of the amazing amount of water it holds. When wrung out tightly it can be used like a Chamois, for cleaning, drying and polishing. There is no other cloth even similar to "Duet". IT CANNOT UNRAVEL. A hidden stitch locks each and every thread through a secret process. The result is a dense surface that is extremely long wearing.

Ideal for **heavy duty in industry. It is a great labor saver and consequently a money saver as well!**

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Producers of
AMSCO CHAMOIS and MERMAID SPONGES

(*Continued from page* 186)

Seventeen new members were received, and announcement made of 29 pending applications for membership. President Millard W. Merrill reported that the membership of the New York association now stands at 578.

"BUYERS BEWARE" BIRMINGHAM

"Buyers Beware" was the subject of a talk by Fred Brooks, manager of the Birmingham Branch of Dun & Bradstreet, at the September 7th meeting of the Purchasing Agents Association of Birmingham which was held at the Redmont Hotel. Three new members were accepted, Chairman H. E. Cross of the membership committee announcing that he has five more applications for consideration at the October meeting. The three new members are J. C. Park, J. R., Alabama Mills, Inc., Thomas H. Fox, V. P. and P. A., Anderson Brass Works, Inc., and John Thomas Hagerty, Jr., Fruehauf Trailer Company.

COLUMBUS ASSOCIATION STARTS 32ND YEAR

For the 32nd consecutive year, the Columbus (Ohio) Association of Purchasing Agents, resumed its regular monthly meetings at the Fort Hayes Hotel, Columbus, September 11th. Speaker for the evening was Prof. Harold J. Grimm of Ohio State University. This was the first meeting presided over by the new officers headed by President M. D. Carlton, American Blower Corporation. Other officers are Vice President W. L. Betz, the Buckeye Steel Castings Co.; Secretary N. C. Hollis, Jaeger Machine Co.; Treasurer J. T. Dunnick, General Electric Supply Corp., and National Director Ollie F. Oelgoetz, F. J. Heer Printing Company.

COMMODITY DISCUSSIONS FEATURE SPRINGFIELD MEETING

The September 13 meeting of the Sprinfield (Ohio) Branch of the National Association of Purchasing Agents, which was held in the Shawnee Hotel, was largely devoted to commodity discussions which B. F. Downey reports were of more than usual interest. The association received a special merit award from the Waste Paper Salvage Committee, Springfield, in recognition of the fine work done by members of the association. Birthdays of several of the members occurred during the month of September, but the only one present to receive good wishes was Joe Cheetham of the Urban Tool & Die Co., Urbana, Ohio, whose membership covers more than 30 years. Several members of the Springfield Association visited the Dayton, Ohio, Association on September 14 to hear Editor Stuart Heinrtiz of *Purchasing* Magazine discuss "What's New in Purchasing."

"ALL THINGS CONSIDERED" CHICAGO

Howard Vincent O'Brien, columnist for "All Things Considered" in the Chicago Daily News, was principal speaker at the September 14 meeting of the Purchasing Agents Association of Chicago, which was held in the Hotel Sherman.

DISCUSS PIPE LINES AT GEORGIA MEETING

"The Rapid Construction of Pipe Lines, and the Meaning of Pipe Lines to People after the War," was the subject of talk by the chief engineer of the Plantation Pipe Line Company at the August 31st meeting of the Purchasing Agents Association of Georgia, held in the Winecoff Hotel, Atlanta.

SIXTH DISTRICT NATIONAL DIRECTORS MEET AT WARREN, PA.

On September 15 and 16, the Purchasing Agents Association of Northwestern Pennsylvania was host to the national directors of the sixth district of the National Association, at a meeting held in the Arlington Hotel, Oil City, Pa. The meeting was presided over by L. R. Forker, Quaker State Oil Refining Corp., Oil City, Pa., vice president of District No. 6.

CONTRACT TERMINATION ST. LOUIS

"The Purchasing Agent's Part in Contract Termination" was the subject of talk by Arthur G. Drefs, vice president and treasurer of the McQuay-Norris Mfg. Co., and chairman of the board of the St. Louis Chamber of Commerce, at the September 19 meeting of the Purchasing Agents Association of St. Louis, at the Coronado Hotel. Also, Colonel Richard W. Coward, assistant district chief, St. Louis Ordnance District, spoke on "Aspects of Contract Termination." Colonel Coward, and three members of the Ordnance District personnel, Major Frank R. Hassler, chief termination branch, Capt. Louis H. Neibling and Francis C. Flynn of the termination branch, served as a panel answering questions from the floor.

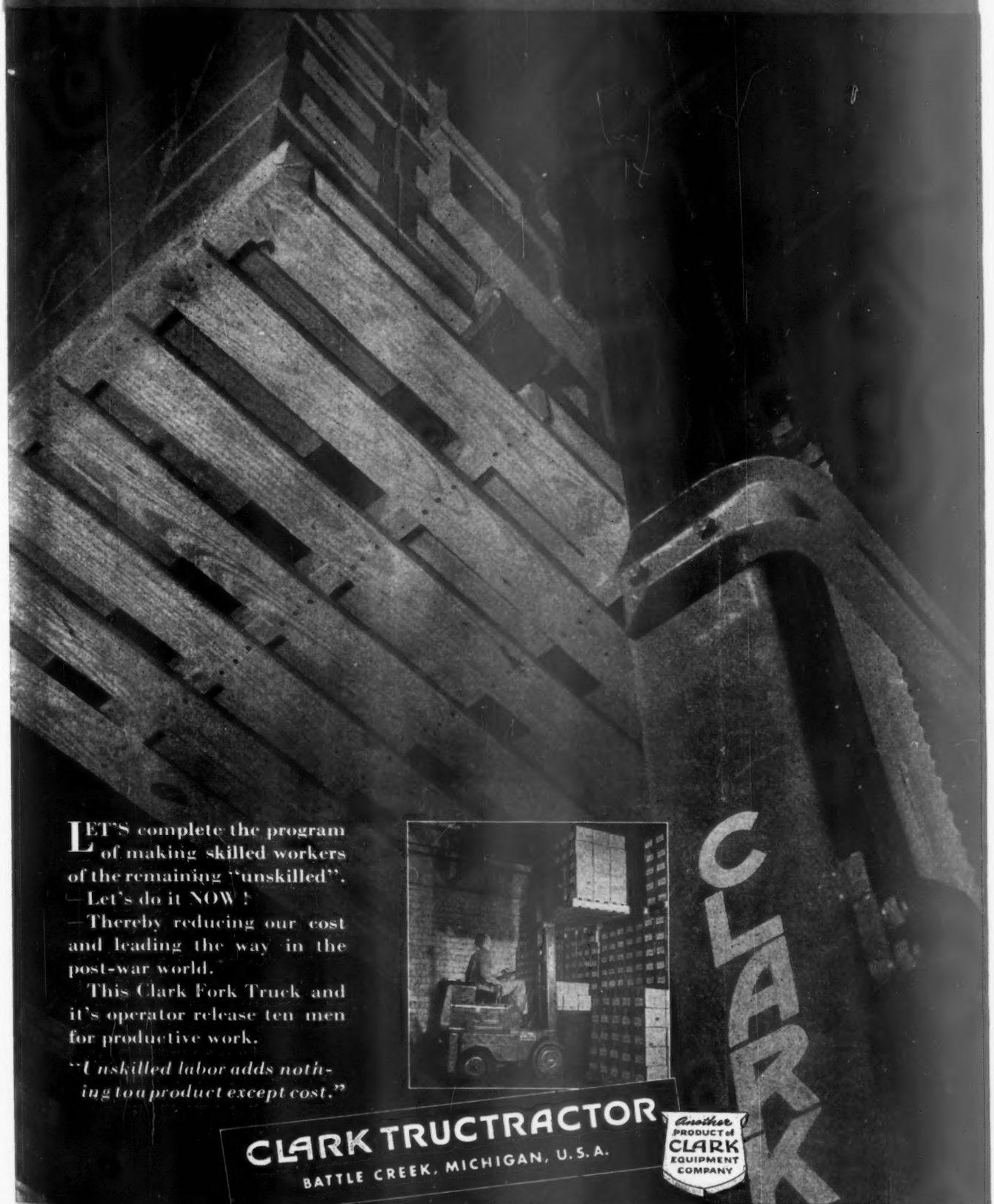
PLANNING FOR POSTWAR PERIOD PITTSBURGH

Russell Weisman, associate editor, Cleveland (Ohio) Plain Dealer, was guest speaker at the September 19 meeting of the Purchasing Agents Association of Pittsburgh, held in the William Penn Hotel. His subject was "How and What Can We Plan for the Post War Period?"

The Pittsburgh Association now has 246 members. Chairmen of standing committees for the 1944-45 term are as follows: Entertainment, L. H. Bittner,

(*Continued on page* 192)

PLANNED MATERIALS HANDLING . . .
goes hand in hand *with* PLANNED PRODUCTION



LET'S complete the program of making skilled workers of the remaining "unskilled". —Let's do it NOW! —Thereby reducing our cost and leading the way in the post-war world.

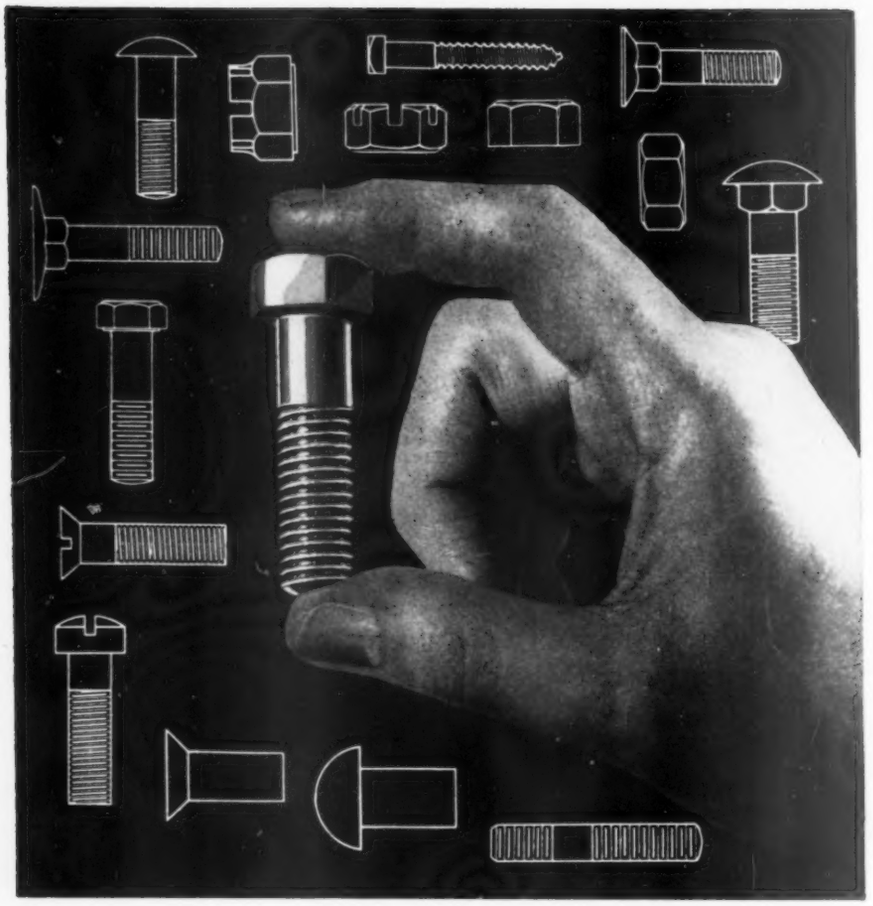
This Clark Fork Truck and it's operator release ten men for productive work.

"Unskilled labor adds nothing to a product except cost."

CLARK TRUCTRACTOR
BATTLE CREEK, MICHIGAN, U.S.A.

Another PRODUCT of CLARK EQUIPMENT COMPANY

OTHER CLARK PRODUCTS — AXLES (Front and Rear) FOR TRUCKS AND BUSES • AXLE HOUSINGS • TRANSMISSIONS • METAL SPOKE WHEELS • ELECTRIC STEEL CASTINGS • GEARS AND FORGINGS • RAILWAY CAR TRUCKS • BLIND RIVETS • HIGH SPEED DRILLS AND REAMERS



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(*Continued from page* 190)

Allegheny-Ludlum Steel Co.; Attendance and Reception, J. P. Wood, Fort Pitt Steel Casting Co.; Membership, H. C. Jones, Cooper Bessemer Corp.; Auditing Committee, H. L. Oberlin, Scaife Co.; Program Committee, A. W. Anderson, Kerotest Mfg. Co.; Publicity Committee, G. Walter, Sanborn, United Engineering & Foundry Co.

LABOR DAY PARTY AND GOLF AT FORT WORTH

The Purchasing Agents Association of Fort Worth, Tex., held a Labor Day party and Golf Tournament at Meadowbrook Country Club, Monday, September 4. Supper was served at seven o'clock, followed by the distribution of prizes and a floor show. The party was strictly stag, and was attended by members, salesmen, and friends throughout the Fort Worth and Dallas area.

"THE CHALLENGE OF PURCHASING" MILWAUKEE

John P. Sanger, vice President and Director of Purchases, U. S. Gypsum Co., Chicago, spoke on "The Challenge of Purchasing, An Executive Responsibility," at the September 12 meeting of the Milwaukee Association of Purchasing Agents, which was held in the Milwaukee Elks' Club. The meeting was featured by the presentation of the June graduates of the association's Purchasing Class, by Professor Knick and Dean Scrimshaw of Marquette University.

WORK OF THE RED CROSS PORTLAND, OREGON

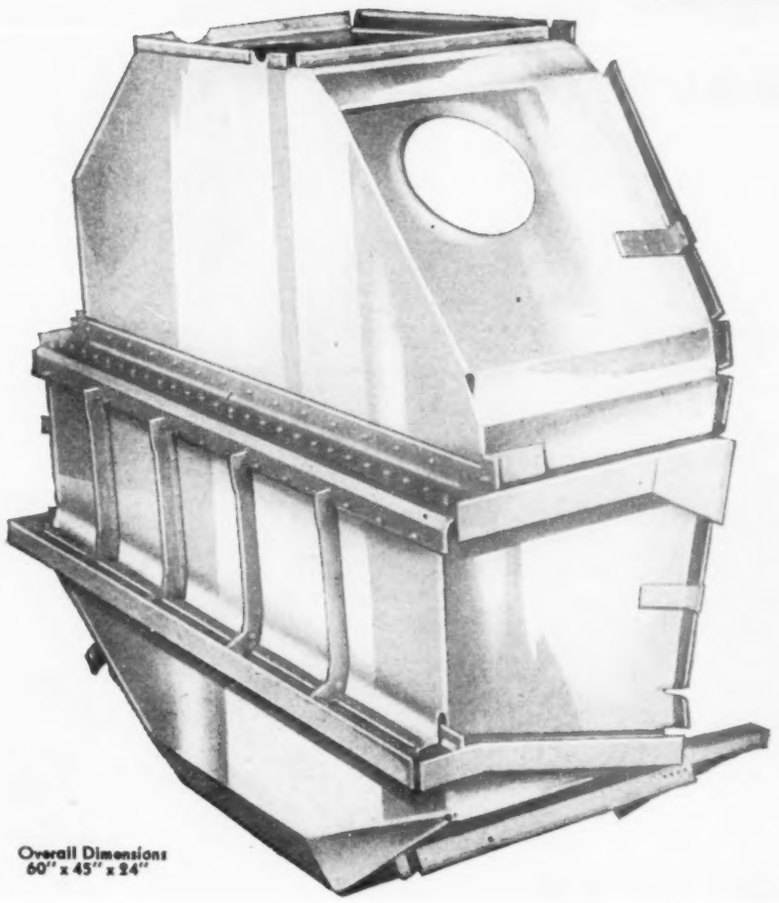
Arnold Groth, vice president and manager of the main branch of the First National Bank and prominent in the Multnomah Chapter of the American Red Cross, addressed the September 8th noon luncheon meeting of the Purchasing Agents Association on the work of the Red Cross. At the September 1st luncheon meeting, Mayor John A. Hogg of Vancouver, Wash., who has been instrumental in the development of that community from a small town to one of metropolitan size, spoke on "Cooperation Versus Competition."

PERTURBED PURCHASING AGENTS AND POST WAR PLANNING AT CANTON, OHIO

"Post War Planning and Related Ponderous, Pertinent Problems of Perturbed Purchasing Agents," was the subject of general discussion at the September 20 meeting of the Canton and Eastern Ohio Association of Purchasing Agents, at the Elks Club, Canton. National Director Ralph Miller of the Canton Association is hospitalized at the Mayo Clinic in Rochester, Minn.

(*Continued on page* 196)

An Oil Tank Shell for a B-29....
WHAT WILL YOU HAVE?





● This is a picture of one of the huge lubricating oil tank shells we're building for the mightiest bomber of them all—the B-29 "Superfortress."

Our reason for showing this interesting aluminum product is not to unduly emphasize our war work but to give you some idea of the scope and complexity of the jobs we are equipped to handle. As is many another vital war product, this precision-built oil tank shell was practically built "under one roof" by the Metal Men of Manitowoc. And new skills perfected during wartime will mean plenty to peacetime industries.

Depend upon us for complete metal fabricating facilities...stamping, spinning, drawing, welding, forming, shaping, rolled sections and heat treating—plus a complete finishing service.

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For a clearer picture of the wide variety of work we are equipped to handle, write for free copy of photo-story of our war production work.

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ALSO MAKERS OF MIRRO, FINEST ALUMINUM COOKING UTENSILS

ARE YOU FISHING AROUND

(Can you name the plastic parts that make up this "fish"? See chart below)



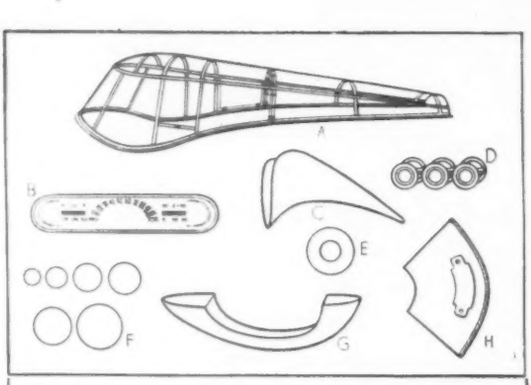
FOR A BETTER PRODUCT?

IF YOU'RE CASTING ABOUT for a way to improve your present product or planning on bringing out a new one, you can profit from the long experience and modern facilities now available in Continental's Plastics Division.*

Our designers and engineers have planned and produced a wide variety of successful plastic products. They are in close touch with the foremost manufacturers of raw materials and will work with them to find the plastic that best meets your design specifications.

Moreover, complete and modern equipment makes it possible to fabricate your product in the most efficient and economical manner—whether by compression, injection, extrusion, lamination or sheet forming.

To assure your product the utmost in beauty, durability, lightness, toughness (or whatever other properties it demands), come to Continental. You'll find an alert, progressive organization whose ruling is to give sound, practical advice and assistance at all times!



(a) Glider canopy—sheet forming; (b) Dashboard dial—compression; (c) Fairing—lamination; (d) Shell plugs—injection; (e) Gear shift ball—compression; (f) Door knobs—compression; (g) Drawer pull—compression; (h) Refrigerator corners—injection.

CONTINENTAL CAN COMPANY, INC.

PLASTICS DIVISION

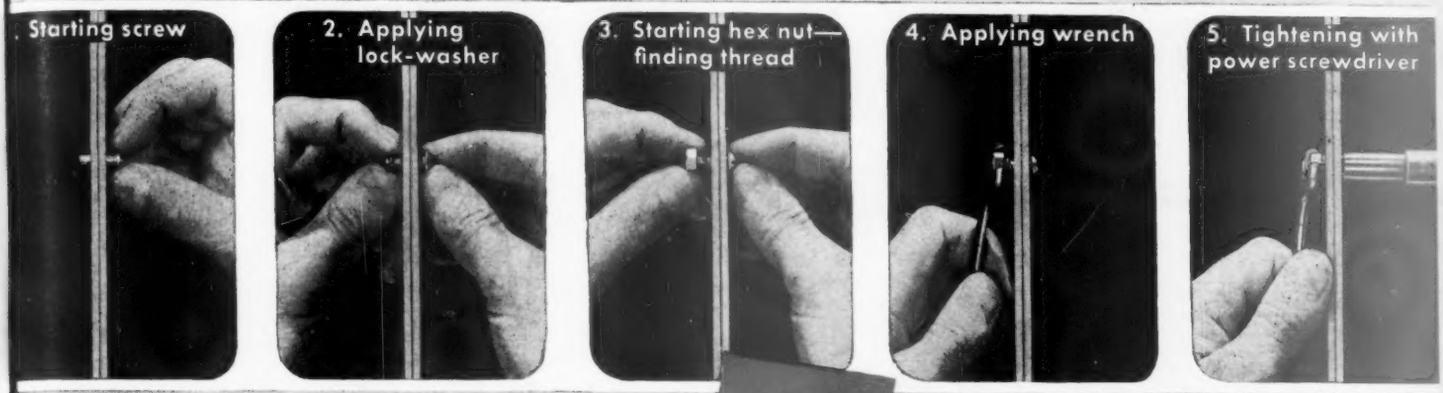
HEADQUARTERS: Cambridge, Ohio

Sales Representatives in all Principal Cities

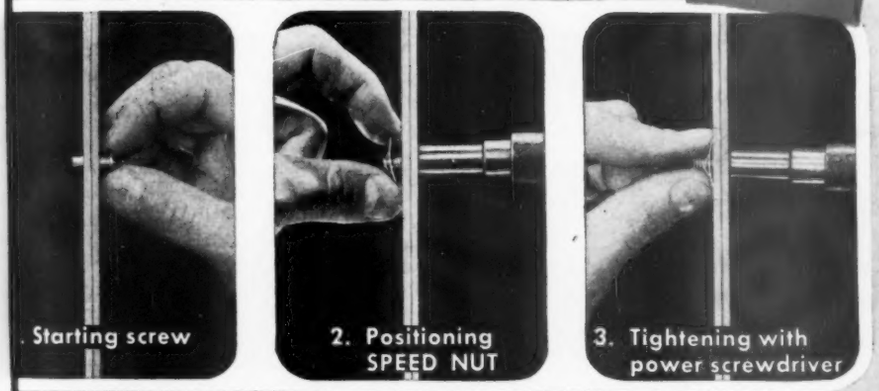
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***To give you the best** in plastics service, Continental has acquired Reynolds Molded Plastics of Cambridge, Ohio. The facilities of this pioneer organization combined with Continental's extensive resources form a Plastics Division capable of designing, engineering and producing the widest range of plastic products for manufacturers and designers.

Which is Better?



THE OLD WAY WITH 5 HAND OPERATIONS



OR THE SPEED NUT WAY WITH ONLY 3 OPERATIONS



***And* a SPEED NUT is a self-locking nut, too, that weighs less, stops vibration loosening and cuts assembly costs 40-50% . . .**

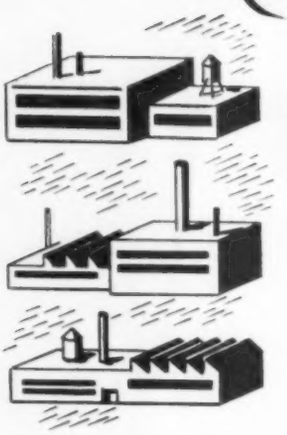
The SPEED NUT method requires only 3 hand operations as shown in photos above. And only 2 parts are needed instead of 3. Why go through 5 hand operations when only 3 are necessary? Why handle 3 parts when only 2 are required? For an eye opener on the economies of the SPEED NUT system just multiply this 40% motion-saving by the millions of fasteners you use per month. Then add to that the saving by eliminating 1/3 of the parts. Your figures will amaze you. The winning products in postwar competition will be those that are assembled faster and protected against loosening from vibration. Billions of SPEED NUTS were used before the war and on war products, too. More billions will be used on postwar products. Over 2,000 shapes and sizes. Engineers who move up faster are those who know how to make assembly lines move faster. Write for literature.

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FASTEST THINGS IN FASTENINGS

Speed Nuts* [PATENTED]

*Trademark Reg. U. S. Patent Office



TITAN *Salutes*

The Army of Supporting Small-Parts Producers



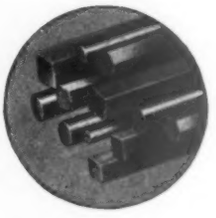
★ We read with pride of the feats of the large, primary armament assembly plants, yet the wonderful production records would not have been possible without the able and patriotic support of small shops.

We salute and congratulate these small parts producers on the fullness of their response and the excellence of their difficult work.

And we have taken pride in supplying them with *TITAN Free-Turning Brass Rods* of a quality and uniformity that have made production easier for this vast supporting army.

These rods are processed under rigid laboratory control from the finest raw materials, then cast to correct temperatures, and finally drawn and cut to size—all under the most careful metallurgical supervision. Their quality was developed especially to avoid interruptions in high-speed machine production.

With our output now devoted entirely to the cause of Victory, we look forward to the time when munition-makers will be producing the products of peace in a happier world. Then all TITAN Brass Rods will be in general supply.





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Quality Alloys By Brass Specialists

Brass and Bronze Rod • Forgings • Die Castings • Welding Rods

(*Continued from page* 192)

MONTREAL ASSOCIATION ADDRESSED BY VICE PRESIDENT DAVIES

Julian G Davies of Hamilton, Ont., vice president of District No. 5 of the N. A. P. A., and president-elect of the Council of Canadian Purchasing Agents, spoke on "The Dawn of a New Day for the Purchasing Agent" at the September 19th meeting of the Purchasing Agents Association of Montreal. Preceding the dinner meeting, the members had the pleasure of an inspection of the Montreal Technical School, arrangements for which were made by J. H. Barnes, chairman of the Plant Visits Committee, where they learned how embryo machinists and more advanced artisans are trained in the very very latest machinery and production methods. The Montreal Technical School is said to be the largest institution of its kind on the North American continent.

RESEARCH CLINIC ESTABLISHED BY MONTREAL ASSOCIATION

Under the chairmanship of D. I. Macdonald, a committee styled the "Research Clinic" has been established by the Purchasing Agents Association of Montreal. The purpose of the Clinic is to help Purchasing Agents solve the knotty problems that present themselves in the course of their activities. As explained by Mr. Macdonald in a recent letter to the membership, each member, as and when such problems arise, irrespective of whether he has made his own immediate decision regarding it, is requested to submit the problem to the Clinic. Each month Mr. Macdonald will endeavor to obtain the best possible advice on the subject either from the association membership or from outside sources, and submit the solutions developed at the regular monthly meeting. The names of the persons submitting problems will not be made known. Chairman Macdonald feels that it would be to the great interest to all of the members if some of the more serious problems were brought to their attention, even though a satisfactory solution has already been reached, for the reason that other Purchasing Agents irrespective of their line of business may have parallel problems.

COMMITTEES FOR TRI-STATE ASSOCIATION NAMED

Members of the Tri-State Purchasing Agents Association, of which C. E. Bales, Ironton Firebrick Co., Ironton, Ohio, is president, combined business with pleasure at a get-to-gether on the estate of W. A. Murdock near Iron, on September 9th. The afternoon was given over to games and jollification, and following a sumptuous dinner of country fried chicken, tender country-gentleman sweet corn, and all the trimming, the members managed to conduct a little business, consisting

(*Continued on page* 198)

No. 7 of a series published by SYLVANIA for users of fluorescent lighting



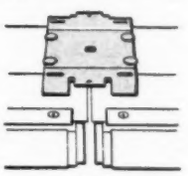
Fluorescent operating hints

METHODS OF MOUNTING FLUORESCENT FIXTURES

It's a good idea to be sure that the fluorescent fixtures you buy will be adaptable to the type of hanging necessary for your installation. Below are shown and described nine typical mounting methods.

SURFACE MOUNTING

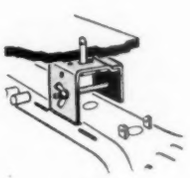
Most commercial fixtures can be bolted to ceiling mounting plates, Fig. 1, which are screwed to wood ceilings or toggle-bolted to plaster. Surface mounting is most popular where ceilings are low or unobstructed by pipes, beams, etc. Otherwise pendant mounting is used. (Note: Industrial type fixtures can be surface-mounted by using slide-grip hangers, Fig. 2, which are described under pendant mounting.)



(Fig. 1)

Surface Mounting With Slide Grip

Slide-grip hanger, Fig. 2, is fastened to ceiling with bolt or lag screw. It grips the lengthwise grooves in the top-housing at almost any point.



(Fig. 2)

PENDANT MOUNTING

There are two basic methods of pendant mounting:

(a) The supporting chain, Fig. 3, or conduit, Fig. 4, is fastened directly to the top-housing. Advantage: low cost. Disadvantage: if obstructions at the ceiling prevent a straight run of chain or conduit from fixture to ceiling, the fixture must be moved until a clear position is reached. This may not be the best position for lighting the work.

Direct with Chain Suspension

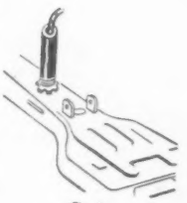
The chain from the ceiling is fastened with S-hooks to the pair of hanging-brackets at each end of the top-housing.



(Fig. 3)

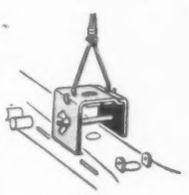
Direct with Conduit Suspension

Threaded conduit with lock nuts is fastened to ceiling beam or outlet box. The other end enters the top-housing through knock-outs. Ornamental canopies are sometimes used at the ceiling end of the conduit.



(Fig. 4)

(b) To overcome ceiling obstructions, the top-housing of some fixtures is grooved on both sides to accommodate a pair of metal clamps, which can be fastened at almost any point along the grooves. Then the hanging device (chain, etc.) is fastened to the clamp. This permits the hanging device to be fastened at the most practical point on the ceiling and permits the fixture to be placed at, or close to, the best point for illumination. Various methods of using these slide-grip hangers are shown below.



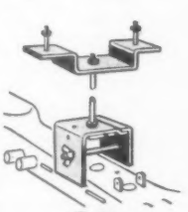
(Fig. 5)

Slide-grip with Chain

S-hooks fasten the chain to the slide-grip. Fig. 5.

Slide-grip with Rod and Ceiling Aligner Bar

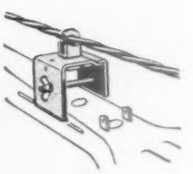
A threaded 5/16"-diameter rod is fastened to the slide-grip with a nut, Fig. 6. At the ceiling, a U-shaped ceiling aligner bar is fastened with lag screws or expansion bolts. The free end of the rod is fastened to the aligner bar with a nut. This insures accurate vertical and horizontal alignment of rows of fixtures.



(Fig. 6)

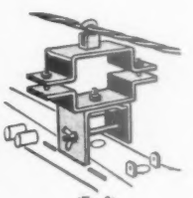
Slide-grip with Messenger Cable

Instead of vertical supports, messenger cable parallel to the floor may be used to support fixtures, Fig. 7. Slide-grip hangers can be supplied with a cable clamp for mounting the fixture in line with, or at 90° to, the cable.



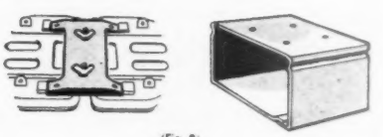
(Fig. 7)

To offset sagging in the cable, the cable-clamp is bolted to an inverted ceiling aligner bar, Fig. 8. This bar is bolted to another, which in turn is bolted to the slide-grip. Drawing up the bolts that join the two aligner bars permits the fixture to be made level with others in same row.



(Fig. 8)

CONTINUOUS ROW MOUNTING



(Fig. 9)

Where continuous rows of fixtures are desired, individual fixtures may be joined along the top-housing with joining straps, Fig. 9, which also provide continuous wireway enclosures. End plates are used at the ends of each row.

ADAPTABILITY IS IMPORTANT

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MEET ALL FEDERAL STRAPPING SPECIFICATIONS

(*Continued from page* 196)

mainly of the appointment of the following committees:

Program: Donald Boyd, chairman.

Membership: F. M. Noecker, H. R. Ruf for Parkersburg, and A. McNally for Charleston.

Attendance: C. B. Holliday, Charleston, chairman, D. L. Moran for Huntington, and H. E. Dearth for Parkersburg.

Publicity: A. A. Meyer, chairman; W. A. Murdock for Ironton; H. M. Byllesby for Kentucky, C. C. Londeree for Charleston, and F. M. Fuller for Parkersburg.

NEW ORLEANS PURCHASING AGENTS VISIT RHEEM MANUFACTURING CO.

Through arrangements made by N. J. Gubler, chairman of the Plant Visitation Committee, members of the Purchasing Agents Association of New Orleans inspected the operations of the Rheem Manufacturing Co., their tour ending in Rheem's new cafeteria where a buffet supper was served.

PUBLIC SPEAKING AND THE BUSINESS MAN—CONN. ASSOCIATION

"Public Speaking and the Business Man" was the subject of an entertaining address by Prof. Hubert Greaves, widely known lecturer and former teacher of public speaking at Yale University, at the September 26 meeting of the Purchasing Agents Association of Connecticut at the Waterbury Country Club, Waterbury, Conn. This was the first fall meeting of the association, and was preceded by an afternoon of golf. Four new membership applications were accepted at the meeting.

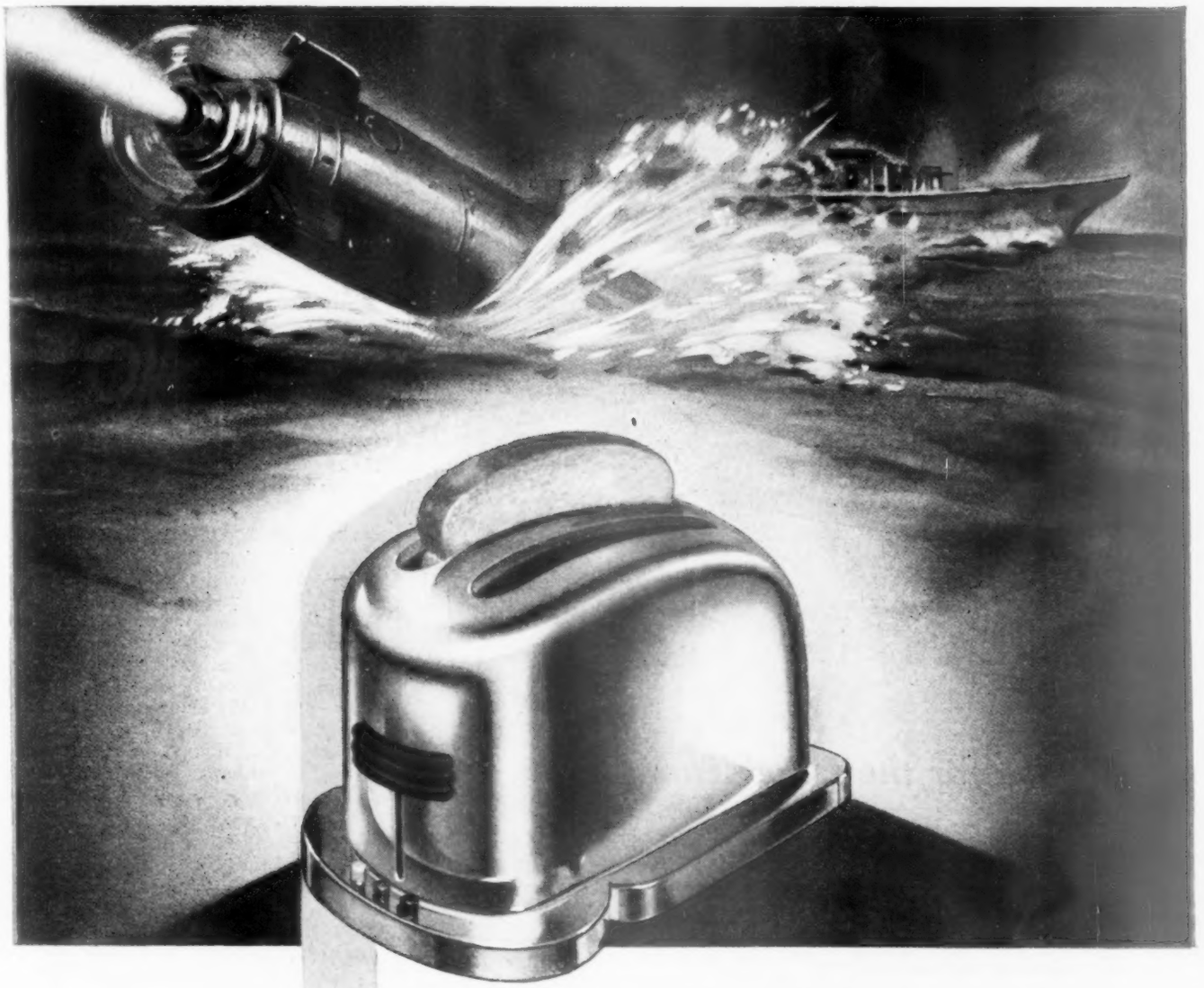
IMPROVED PURCHASING THROUGH RESEARCH AND TESTS—WASHINGTON, D. C.

After July and August meetings, which combined business with pleasure, one meeting at a country club and the other on a fishing smack, most of the membership of the Purchasing Agents Association of Washington, D. C. "got off to a bang" at their first fall meeting on September 12, 1944, at the Mayflower Hotel.

In fact the discussion following the talk of the guest speaker, Charles B. Bryant, assistant vice president in charge of Research and Tests, Southern Railway System, was more active and prolonged than any question-answer period previously held, according to R. M. Brennan. Mr. Bryant gave an exceptionally interesting talk on improved purchasing through research and tests. He emphasized the need for close cooperation between the purchasing department and the individuals responsible for the determination of reqiurements, the development of specifications, inspection and research.

He made the point that today, more than ever before, there is need for constant study of new materials and processes, and that the scope of a railroad's

(*Continued on page* 200)



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As the pendulum of war swings on toward peace and reconversion, Western brass will again be used in products designed for service—utility—convenience—beauty—and comfort.

Post-war industry will want Western brass—in sheet or strip, drawn or stamped parts—because it is easy to form, draw, buff and plate, and because it will be "tailored" to meet exacting specifications.

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(Continued from Page 198)

requirements is so large that the testing and research groups have great diversification. Mr. Bryant gave numerous instances of the development of new materials and explained the importance of each. Much interest was emphasized in the post-war possibilities in the new materials field.

Following the business meeting, the latest Navy film entitled "Behind Nazi Guns," and the latest Army film, "Brief for Invasion" were shown through the courtesy of George Westefeld of the American Anaconda Brass Company.

Announcement was made at the meeting that President R. C. Swanton of the National Association of Purchasing Agents, who is Purchasing Agent for Winchester Repeating Arms Co., New Haven, Conn., would visit the local association at its November meeting.

DISCUSS COAL AT CLEVELAND FORUM

Carl A. Ilgenfritz, director of Purchases, Republic Steel Co., Cleveland, Ohio, lead a symposium on "Coal" at the monthly commodity meeting of the Purchasing Agents Association of Cleveland at the Hotel Cleveland, September 21st. At the dinner meeting that followed, Dean Chatlin, P. A., Morse Instrument Co., Hudson, Ohio, discussed his experiences in the Tunisian campaign.

DISCUSS POSTWAR ACTIVITIES AT LOUISVILLE

The Purchasing Agents Association of Louisville, Ky., held its regular monthly dinner meeting September 18th at the Kentucky Hotel. Mayor Wilson Wyatt addressed the meeting, discussing the Louisville's Area Development Plan. The plan was initiated by the mayor in an effort to coordinate all of the city's postwar activities. T. A. Corcoran reports that it has gained national recognition and has been followed by a number of other municipalities. Professor Charles W. Williams, head of the Economic Department of the University of Louisville outlined the current economic situation.

Henry W. Gutmann of the Standard Oil Company of Ky. was elected a director to serve the unexpired term of Malcolm Mason—a director, former president and national director who passed away recently. The following new members were formally introduced: Walter C. Byers of the Norton Infirmary; Phillip C. Moll of the Moll Co.; and Ben H. Strechfus, Carbide and Carbon Chemicals Corporation.

ROCHESTER INDUSTRIAL BUYERS DISCUSS POSTWAR PLANS

The Rochester Association of Industrial Buyers held its first meeting of the season at the Chamber of Commerce, September 13, at which the Rochester Purchasing Agents Association was well represented. Speaker for the evening was Edmond S. LaRose, controller and director of the Bausch & Lomb Optical Co., who addressed the group on "Con-

(Continued on page 204)

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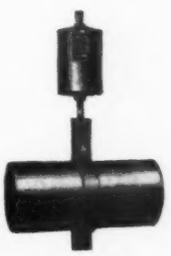




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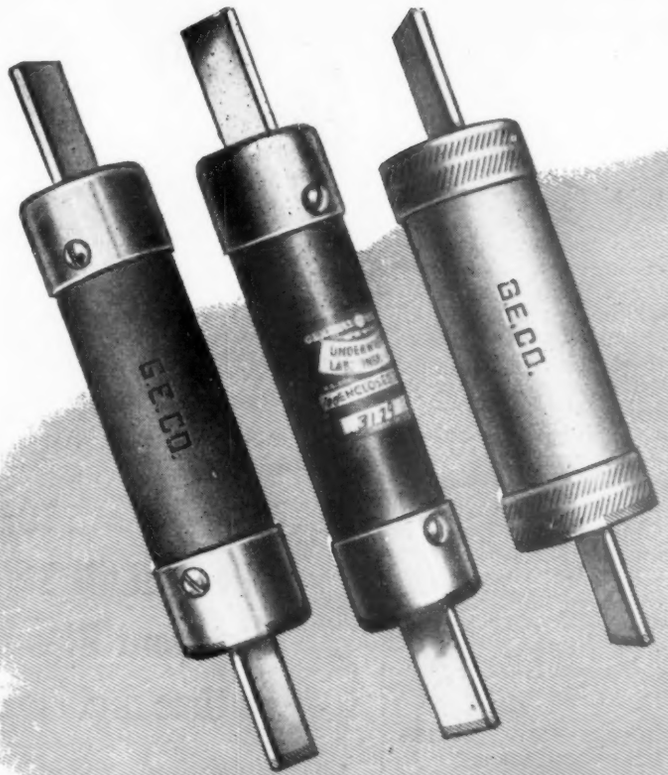
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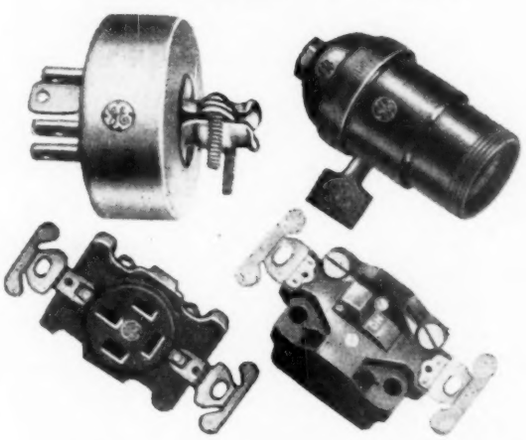
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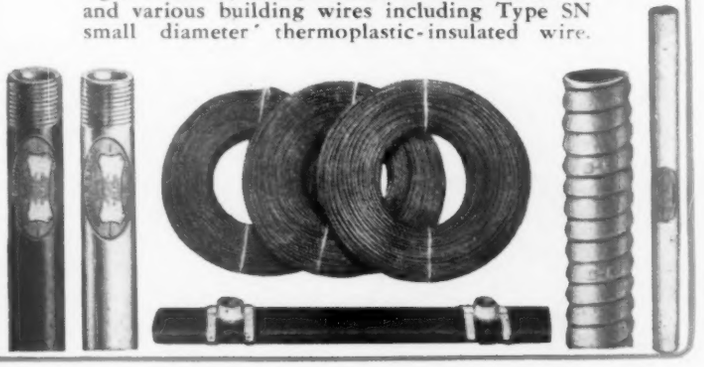


G-E wiring devices are available for all kinds of war-project wiring needs — for maintenance, rewiring or new wiring. The G-E line includes switches, outlets, lampholders, twist-lock devices, connectors, connector bodies, caps, fuses, fluorescent lampholders and starters, etc. These devices are high quality and will give long service.

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Write for sample menu Bulletin K

Shows balanced hot meals that can be served with the AerVoiD Mobile Cafeteria

(Continued from page 200)

trolling Production and Inventory for V Day and the Postwar Period."

Mr. LaRose stated that production must be planned through V-Day to 1950 on the basis of forecasts. Products should be classified as between durable and non-durable items, and the profitable and non-profitable items segregated so that production and sales emphasis can be placed on the more profitable items.

He declared that plant expansion or contraction should be planned now so that when partial or total conversion to peace-time production comes, moves and changes shall be made once only. He said that labor costs will control prices and all indications point to higher costs, with consequent higher retail costs.

He expressed the thought that by planning production a year in advance and thereby avoiding the ups and downs of seasonal buying, such practice would help to reduce costs.

The Buyers group and the Purchasing Agents Association will hold a joint meeting in October.

* * *

PACIFIC NORTHWEST PUBLIC BUYERS SEMI-ANNUAL CONFERENCE

The semi-annual conference of the Pacific Northwest Public Buyers Association was held at the Elks temple, Tacoma, Wash., September 8th. The meeting was attended by representatives of the state purchasing offices of Idaho, Oregon, Washington, California, British Columbia, Portland, Seattle and Tacoma school districts; University of Washington, Bonneville power administration; U. S. Army, Los Angeles and San Francisco counties, Calif., Multnomah county, Ore., and Pierce county; and the cities of Los Angeles, San Francisco, Vancouver, Victoria, B. C., Salem, Portland, Seattle and Tacoma.

* * *

CURRENT PROBLEMS IN PURCHASING HAMILTON, ONTARIO

Following a general commodity discussion led by Bernard Yardley of Stanley Works Ltd., Hamilton, Ont., Editor Stuart Heinritz of Purchasing Magazine addressed the September 20 meeting of the Purchasing Agents Association of Hamilton, Ont., at the Royal Connaught Hotel, on "Current Problems in Purchasing." The meeting was unusually well attended, 80 of the association's 109 members being present, and in addition there were several visitors. The meeting was preceded by a plant visit and buffet luncheon at the plant of the Wallace Barnes Company.

* * *

CHARLES MINOT HEADS NEW YORK STEAMSHIP GROUP

Charles O. Minot, purchasing agent of A. H. Bull & Company, Inc., was elected chairman of the American Steam-

(Continued on page 206)



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Mountains of mail from great war plants testify to the amazing efficiency of Lan-O-Kleen* in helping to combat dermatitis—scourge of production. Tested in the fire of wartime necessity, Lan-O-Kleen has sprung to top place in many of our greatest war plants. Make this Success Story your own Success Story by equipping your washrooms with Lan-O-Kleen—the soap that cleans *mildly* but effectively.

Lan-O-Kleen is the first industrial hand soap to provide a full measure of the double action of *effective* cleansing and proper *super-fatting* with soothing, protecting lanolin.

It removes 95% of all soils encountered in industry without injuring the skin and leaves hands feeling better, more ready for work and thus *helps prevent most occupational dermatitis.*

Lan-O-Kleen is a powdered soap of *mildly* alkaline reaction compounded with granular corn-meal which has been impregnated (by an exclusive process) with anhydrous lanolin. In its use, the lanolin in Lan-O-Kleen buffers the alkaline reaction of the soap, protecting the natural oil film of the skin and leaving the hands ready for top-speed war production.

• *Send for your free copy of this booklet.*



WEST DISINFECTING *Company*

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(*Continued from page* 204)

ship Purchasing Agents Group at the annual meeting held at the Downtown Athletic Club, New York. He succeeded John B. Sullivan of Grace Line, Inc.

Other officers elected were: vice-chairman Charles J. Ogg of the Marine Transport Lines; secretary, J. H. Leonard; members of the executive committee, Henry A. Hartland, Agwilines, Inc., Charles J. Nicholas, American President Lines; O. C. Webster, Lykes Brothers; John B. Sullivan, Grace Lines and Bertram F. Nixon, Texas Company.

The Steamship Group which is affiliated with the Purchasing Agents Association of New York comprises 60 companies that own or operate the greater bulk of the tonnage of American merchant shipping.

RHODE ISLAND ASSOCIATION ANNOUNCES COMMITTEE APPOINTMENTS

The Board of Directors of the Purchasing Agents Association of Rhode Island, made up of Clarence E. Conkey, Blackstone Valley Gas & Electric Co., John S. Dickson, Manville Jenckes Corp., James G. Gunderson, Federal Products Corp., and Thomas W. Seavor, Brier Mfg. Co., is responsible for the meeting programs. The Commodities committee consists of five members with Franklyn A. Adams, State of Rhode Island, vice president of the association as chairman. Other members of the Committee are Daniel Townsend, chemicals division; Fletcher B. Burton, Fuel division; Mahlon E. Wallace, lumber division; Robert C. Hammond, Metals division, and Alfred W. Logan, paper division.

Director John S. Dickson is also chairman of the Membership committee; Charles T. Wass, U. S. Oil Co., second vice president of the association, is Finance chairman, and Arnot Hirst, secretary-treasurer is chairman of the Outing and Christmas Party committee and Year Book Advertising committee, and Raymond W. Dixon is assigned the Year Book editorial responsibility.

The September 25th meeting of the Association which was held in the Narragansett Hotel, was addressed by J. Noble Snider, vice president of the Consolidated Coal Co., who has previously spoken at conventions of the National Association. The Board of Directors recently approved the membership applications of F. C. P. Drummond of the Lonsdale Co., and Russell K. Robbins, Sr., Owens-Corning Fiberglas Corporation.

PRISONER OF JAPS SPEAKS AT OKLAHOMA CITY MEETING

Herman Schlund, who was in the Orient prior to Pearl Harbor, and later a prisoner of war in a Japanese Concentration Camp, was guest speaker at the September 19 meeting of the Purchasing Agents Association of Oklahoma City, at the Huckins Hotel, Oklahoma City, Okla. His recitation of his ex-

(*Continued on page* 210)



No wonder American industrialists are dizzy! – Columnists, commentators, conferences and a host of critics on the sidelines advising business to "Go ahead" — to "Hold back" — to "Stand still."

Red lights today, green lights tomorrow.

Through the maze of conflicting regulations, press releases, industry bulletins, it is safe to predict, however, that civilian production will resume shortly. But we must win the war first.

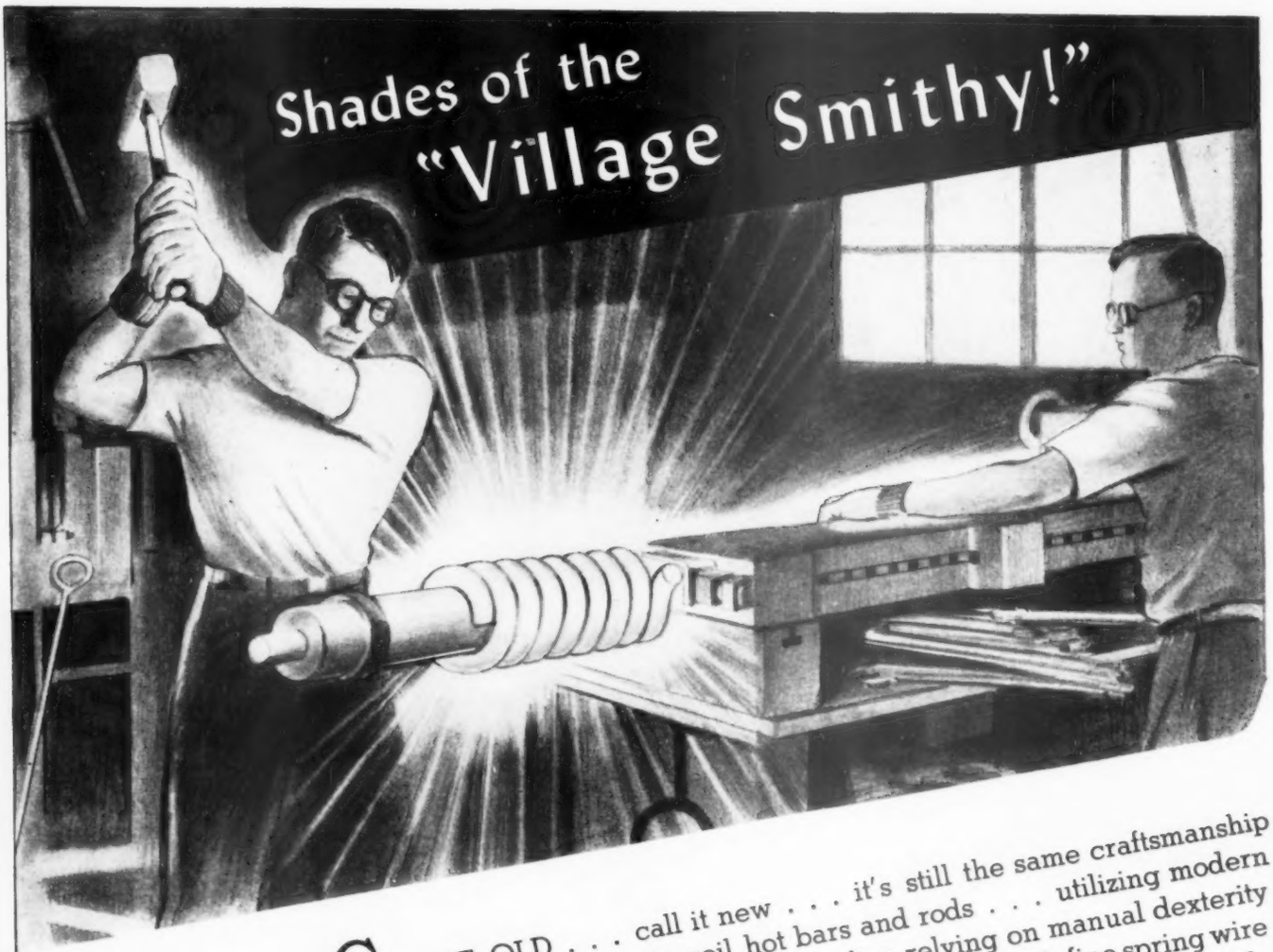
We at G. I., realizing that wars always end more suddenly than they begin, decided long ago on a post war planning schedule. It may help to clarify your problem to know that we will be under way immediately when Uncle Sam issues the go-ahead signal.

The first in our industry to be so honored

Our products comprise new and improved components in the electronic and radio fields — variable condensers, automatic tuning mechanisms, record changers and new items developed and perfected from the research of our wartime experience.

GENERAL INSTRUMENT CORP.

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CALL IT OLD . . . call it new . . . it's still the same craftsmanship instinct that knows how to coil hot bars and rods . . . utilizing modern mechanical methods to the fullest, yet often relying on manual dexterity for ease of manufacture. Contrast this weighty work with fine spring wire or flat steel, fed through high-speed automatic machines, delicately adjusted to precision limits. This is the spring business . . . as practiced at Gibson's . . . so versatile that any force desired can be translated into shapes of resilient energy, controlled power. Long years have been spent investigating spring behavior under all conditions . . . yet this knowledge is available to you instantly . . . by consulting Gibson engineers when you need springs.

BUY MORE WAR BONDS

GIBSON SPRINGS

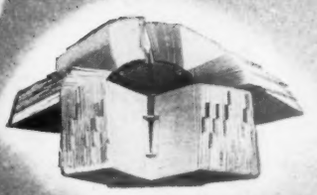
The WILLIAM D. GIBSON CO. DIVISION OF ASSOCIATED SPRING CORPORATION

1800 CLYBOURN AVENUE, CHICAGO 14, ILLINOIS

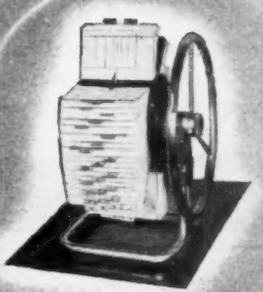
Cardineer WILL RELEASE SKILLED HELP FOR VITAL WAR WORK by reducing record-keeping to simplified routine



Cardineer MASTER MODEL, 72-58. 6,000 cards parade their data.



Cardineer HORIZONTAL DESK MODEL, 72-70. Three removable desk tray segments. Cap. 2500 cards.



Cardineer DESK MODEL, 72-05. Satin chrome finish. Cap. 1500 cards up to 6" x 4".



Cardineer SENIOR MODEL, 72-45. The capacity of this unit will surprise you.

Emphasis now falls on the need for skilled help. Skilled help knows *how* — knows *where* — knows *when*. Such employees are far too valuable to waste on routine work — especially when records can be handled quicker, more simply, and in much more compact form by using Cardineer — the Rotary file that brings the record to you for quick posting or instant reference.

Thus, Cardineer speeds the war effort by definitely saving skilled manpower. It comes in four models — each compact, portable and so priced that its cost is quickly discounted through the economies it brings. Choose the model best suited to your need.

Phone or write for details.

DIEBOLD INCORPORATED • Canton 2, Ohio

BUY WAR BONDS

DIEBOLD ARMOR FOR AMERICA'S ARMED FORCES

DIEBOLD

Systems to Fit the Routine

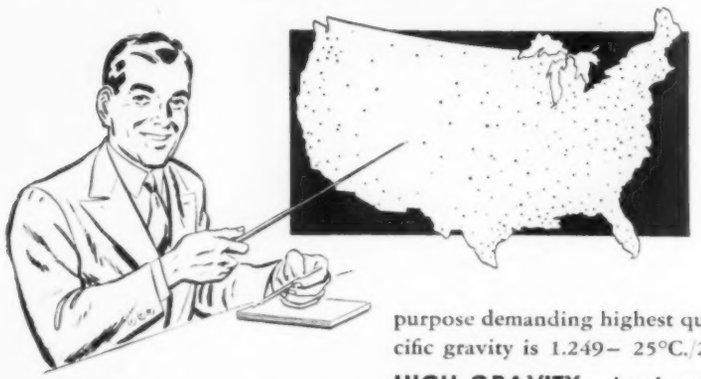
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QUICKLY AVAILABLE AT A STOCK POINT NEAR YOU!



Armour's 332 stock points mean fast, dependable service for your present and future glycerine needs.

CHEMICALLY PURE or U. S. P. . . . A high grade, water-white glycerine meeting the requirements of the United States Pharmacopoeia. Suitable for use in foods, pharmaceuticals, cosmetics or for any purpose demanding highest quality. Specific gravity is 1.249– 25°C./25°C.

HIGH GRAVITY...A pale yellow glycerine for industrial purposes with a specific gravity of 1.262– 15.5°C./15.5°C.

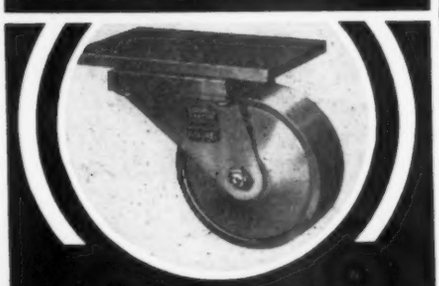
DYNAMITE...A yellow glycerine made especially for the explosives trade. It has a specific gravity of 1.262– 15.5°C./15.5°C.

YELLOW DISTILLED . . . A yellow glycerine for industrial purposes with a specific gravity of 1.259– 15.5°C./15.5°C.

ARMOUR AND COMPANY 1355 WEST 31ST STREET CHICAGO 9, ILLINOIS

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extra Dependability, Durability, and Service

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LONG BEACH, CALIFORNIA,

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36 N. CLINTON, CHICAGO ILL

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do *your* shovels



RAZOR-BACK Shovels are 60% thicker at these points of wear and strain—



Available for Essential Needs

THE UNION FORK & HOE CO.
691 Hocking Street Columbus 15, Ohio
Also Stone, Ballast, Industrial Forks, Asphalt and Road Rakes—Your Inquiry Invited.

RAZOR-BACK

(*Continued from page* 206)

periences prior to and during the war and as a war prisoner proved highly interesting.

Chairmen of association committees for the current association term are as follows: R. W. Hudson, program commitee; H. W. Fowler, entertainment committee; G. W. Qualls, treasurer, membership committee; Geo. R. Conover, attendance committee; A. L. Tucker, magazine committee; W. R. Heyman, educational committee; Carl L. Wilson, dinner arrangement. Mr. Tucker is also chairman of the plant visitation committee.

TALK ON ARMY CAMPS AT TOLEDO

Harold E. Williams, principal of Libbey high school, Toledo, Ohio, who has just returned from a tour of Army camps made at the request of the Government, discussed his findings on the trip at the September 21st meeting of the Purchasing Agents Association of Toledo, Ohio.

PRESIDENT SWANTON ADDRESSES INDIANAPOLIS MEETING

President R. C. Swanton of the National Association, Purchasing Agent for the Winchester Repeating Arms Co., New Haven, Conn., was guest speaker at the September 18 meeting of the Purchasing Agents Association of Indianapolis (Ind.), at the Columbia Club.

ANNUAL BUSINESS CONFERENCE AT MONTREAL

The 20th annual conference of Canadian Purchasing Agents Associations will be held in the Mount Royal Hotel, Montreal, October 20th and 21st. Among the speakers will be President R. C. Swanton and Executive Secretary George Renard of the National Association of Purchasing Agents. Special speakers will discuss such subjects as the postwar future of light metals, wood chemistry, glass, fuels, air condition, and the disposal of surplus war materials and equipment.

The conference, incidentally, marks the silver anniversary of both the Toronto and Montreal Associations, which will be fittingly celebrated at a luncheon meeting. Chairman James Barnes of the Plant Visits and Transportation Committee has made arrangements for the Purchasing Agents to visit Canadian Vickers Ltd. Marine Division, where they will have the opportunity of viewing modern ship-yard operations during wartime.

Friday night, the 20th, has been set aside for the smoker and some high class entertainment. And, it is expected that the annual banquet will be an outstanding event.

BRITISH COLUMBIA ASSOCIATION RESUMES MEETINGS

The Purchasing Agents' Association of British Columbia, Vancouver, B. C., resumed activities following the summer vacations, with the first regular monthly

(*Continued on page* 212)





"HAND ME MY POWDER-PUFF... DEARIE"

. . yes. The boys joke about it . . . but it's a grim business to play hide-and-seek with enemy snipers . . . and so, across a world of space, Mason boxes carry a compact camouflage kit by a prominent cosmetician . . . that helps give them a precious advantage. Another Mason Mailmaster may carry secret radar parts to a fighting front half a world away. Your travel may be restricted until Victory . . . but there's no limit to the range of Mason boxes.

The MASON BOX COMPANY

ATTLEBORO FALLS, MASS. — 175 5TH. AVE., NEW YORK



CASTINGS

★ Gray Iron
★ Semi-Steel
★ High Test Semi-Steel
★ Any Size up to one ton

Two modern foundries equipped for fast, efficient production can meet your casting requirements.

THE FOREST CITY FOUNDRIES CO.

2500 West 27th St.
Cleveland 13, Ohio

PHONE PRospect 5040

(*Continued from page 210*)

meeting at the Vancouver Hotel, Tuesday, September 12. A. O. Scott, president for the current year, welcomed the members, and introduced three new members, J. Davidson, B. B. Lee, and R. E. Cope.

Guest Speaker F1/Lt. James Sinclair M.P. for Vancouver North in the Federal House addressed the meeting on "The Life of A Member of Parliament in Ottawa." He traced the activities of a member from the time of his nomination through to his election as a Federal Member, giving in some detail what constitutes an average day in the life of a member at Ottawa.

Following this address, Albert E. Baker, Purchasing Agent for the B. C. Pulp and Paper Company Limited, outlined the purchasing procedure followed by his firm. The ensuing discussion proved interesting and helpful. It is the intention of the Program Committee to have as many of these educational discussions as possible at future meetings.

The B. C. Provincial Department of Trade and Industry has solicited the association's cooperation in formulating a policy of assistance to local war industries in their postwar plans for conversion from war to peace-time production. The matter will be thoroughly discussed at the October 10 meeting of the association.

TEXAS COMPANY PURCHASING DEPARTMENT IN NEW QUARTERS

The New York offices of The Texas Company's Purchasing Department have been moved from their former location at 135 East 4nd Street to the Chanin Building, 122 East 42nd Street. The move involved some 50 employees of Texaco's Purchasing Department, General Headquarters, and about 30 employes of the Northern Division.

"BOLTS, NUTS & SCREWS" 1944 EDITION

New 1944 edition of "Bolts, Nuts & Screws," case-bound, 180-page book, the second edition of this compilation of technical articles from business, technical and trade papers, has been published by The Lamson & Sessions Co., Cleveland, Ohio. It is a virtual handbook for guiding specification of and purchasing of headed and threaded upset products. It is available at $1.00 per copy.

MOVING PICTURE ON EXTINGUISHING FIRES

Walter Kidde & Co. have retained the Princeton Film Center, Princeton, N. J., as distributing agents for its 20-minute, 16 mm. Kodachrome sound film which shows how a fire burns, the appropriate extinguisher for each type of blaze and its correct use. The film illustrates some of the common errors in industrial first-aid fire fighting which can be responsible for failure, and gives valuable tips on fire prevention. Booking charge of 50 cents is made to cover handling costs.

ELECTRONICS TRAINING COURSE PREPARED BY WESTINGHOUSE

Designed to give in a clear, understandable manner the basic principles and applications of Electronics in industry, a new ten-part training course covered by sound slide films, lesson books, quiz books, and an instructor's manual has been prepared by Westinghouse Electric & Mfg. Co., Pittsburgh, Pa.

Although designed primarily for Westinghouse employes, the material has been made available to others at reproduction costs because of many requests from engineering groups and individuals interested in Electronics.

It is recommended that twenty hours should be allowed for the full 10-part course—two hours for each part, with classes held one night each week, thus giving class members a chance for review and supplemental reading.

NEIL A. FOWLER RETURNS TO GENERAL BOX COMPANY

Neil A. Fowler has returned to his former position as Vice President and Director of Research, General Box Company. Mr. Fowler served as Chief of



Neil A. Fowler

Packaging Branch, Army Ordnance Department, Washington, D. C., from February, 1942, to June, 1944.

During his service in that capacity, Mr. Fowler supervised the engineering and design of containers for the many types of equipment and supplies produced by the Army Ordnance Department.

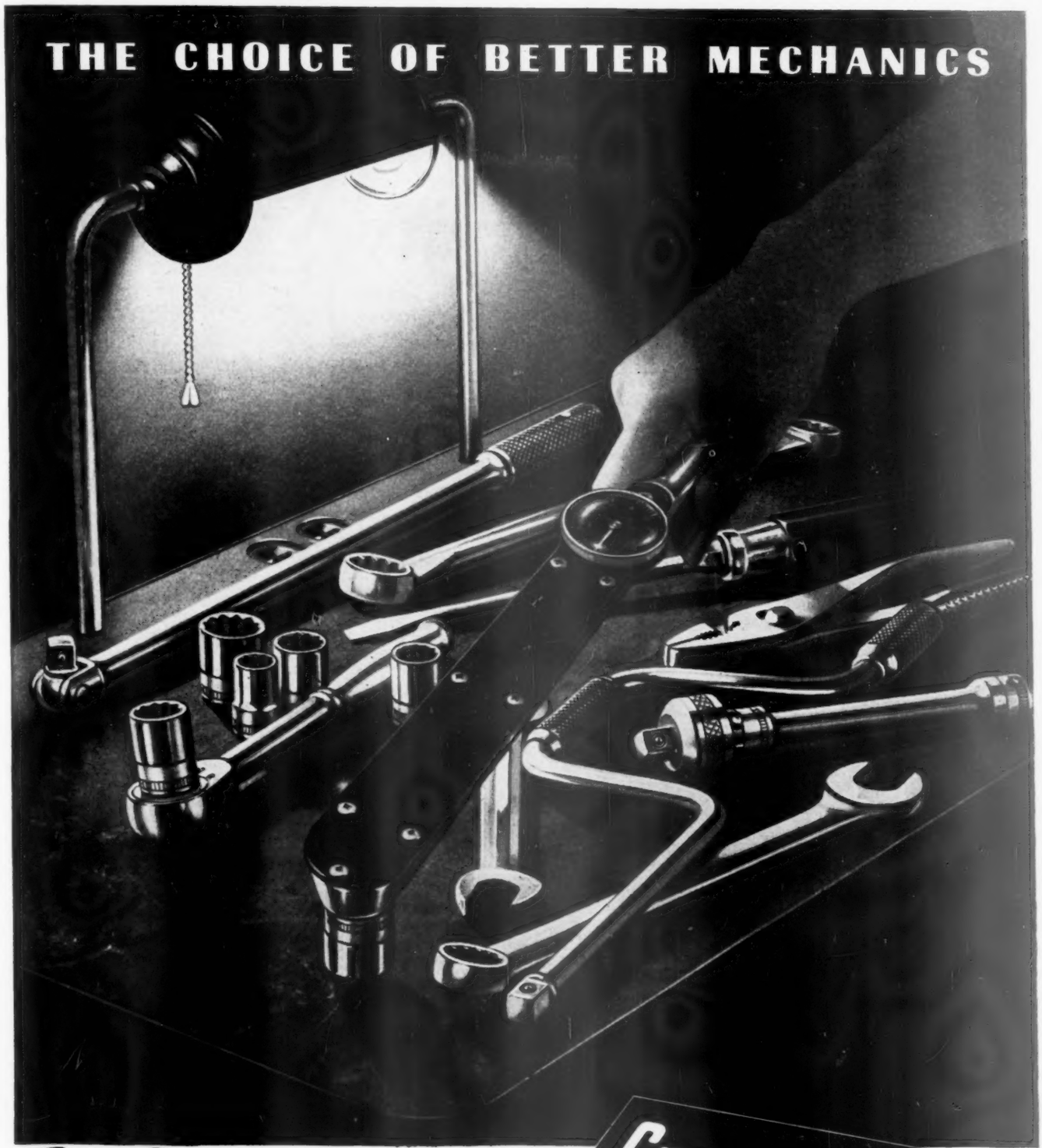
MOVING PICTURE SHOWS PLASTICS MOLDING

Moving picture in Kodachrome, entitled "The Shape of Things to Come," is available from the Boonton Molding Co., 122 East 4nd St., New York, N. Y. It gives an interesting portrayal of molding plastics.

FORM ODT663 MUST BE USED FOR MOTOR VEHICLE PURCHASES

District managers of the Office of Defense Transportation have been instructed not to accept any applications for purchase of new commercial motor vehicles on the old form (WPB 663), as the new simplified form (ODT 663) is now avail-

(*Continued on page 214*)



For Every nut turning operation there is a Snap-on wrench *engineered* to do the job better, easier, with greater accuracy and safety. Standout for *precision* is the Snap-on Torqometer shown above . . . unexcelled among tension measuring wrenches for unfailing accuracy under all conditions.

Widely used in factory assembly where accurate bolt tension is essential, Snap-on Torqometers are also the choice of better service mechanics. As you tighten the bolt, you *watch* the tension increase . . . on the easily read dial . . . and stop at exactly the pre-determined pressure.

Snap-on's Torqometer series covers every tensioning requirement . . . 15 sizes ranging from zero to 30 in. lbs., up to 2000 ft. lbs. New industrial uses, such as adjusting tension on bottle capping machines, power hack saws, etc., are continually developing. Write us your tensioning problems and our engineers will gladly advise on individual requirements.

Snap-on Tools
THE CHOICE OF BETTER MECHANICS

SNAP-ON TOOLS CORPORATION, 8048-J 28th Ave., Kenosha, Wis.

Amsco Alloy Plays a Key Role *in Armament Production* . . . . . .

The war production program called for heat resistant containers and other parts in unprecedented quantities. To meet these requirements for urgently needed chromium-nickel alloy castings, we have greatly increased our Amsco Alloy production.

Amsco Alloy is made in a variety of analyses, to meet the requirements of the entire range of applications which call for maximum resistance to heat and corrosion. Their proper application minimizes replacements and conserves less suitable metals for other uses — therefore, Amsco Alloy has a dual war-time role: serving and saving.

The pictures show a few representative applications:

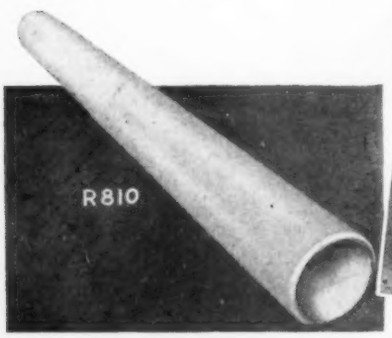
R-810—One of a great many Amsco Alloy F-1N retorts made for producers of magnesium metal used for incendiary bombs and aircraft parts. Each retort weighs 1,100 lbs. A cap is welded on one end.

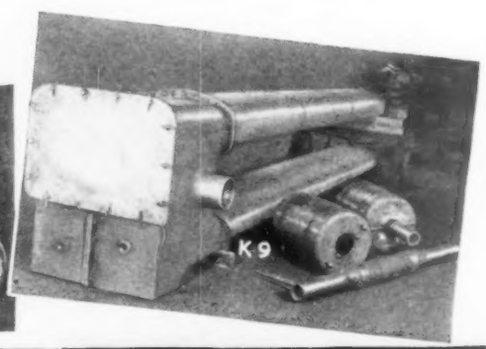
K-9—One of 11 Amsco Alloy F-1 and F-10 assemblies for gas-fired controlled atmosphere muffle type furnaces for heat-treating machine gun clips. Muffles are 20′ long, cast in three sections, butt-welded together and bolted to discharge housing by flanges.

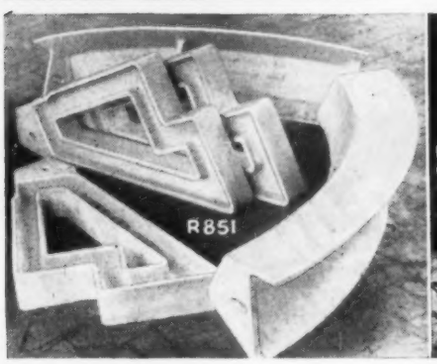
R-851—Amsco Alloy F-10 frame castings for rotary type furnace, consisting of guides weighing 71 lbs. each and supports, 53 lbs. each.

R-875—Besides speeding production of needed parts, these Amsco-Johnson reversible tray assemblies (U. S. Patent 2,303,882) conserve metal three ways: (1) Made of Amsco Alloy F-1; (2) Rails cast separately eliminate heating and cooling stresses that result when rails are cast integral because of heavier metal section where rail joins tray; and (3) Rails can be removed by torch-cutting holding pins, permitting trays to be "flopped over" to compensate for warpage.

Ask for Bulletin 1041-A covering Amsco Alloy Heat Treating Containers, Retorts and Furnace Fixtures.









Amsco
AMERICAN MANGANESE STEEL DIVISION
Chicago Heights, Illinois
FOUNDRIES AT CHICAGO HEIGHTS, ILL.; NEW CASTLE, DEL.; DENVER, COLO.; OAKLAND, CALIF.; LOS ANGELES, CALIF.; ST. LOUIS, MO.
OFFICES IN PRINCIPAL CITIES

AMERICAN Brake Shoe COMPANY

(*Continued from page 212*)

able in all district offices, reports Director J. Monroe Johnson.

"This simplified form, which became effective on September 1, following transfer of rationing of commercial motor vehicles from the War Production Board to ODT, must be used by all those applying for certificates of transfer to obtain new vehicles," Colonel Johnson said.

Trucks, truck tractors and trailers are included in the rationing program now completely under the jurisdiction of the Allocation Section of the ODT Highway Transport Department, headed by Matthew E. Kane, section chief.

* * *

TOOL STEEL SUPPLEMENTARY ORDER M-21-h REVOKED

Supplementary Order M-21-h, governing purchases of tool steel, has been revoked, the War Production Board reports.

Requirements for tool steel have decreased to a point where the controls and reports that M-21-h called for are no longer necessary, according to WPB. The revocation states that the action does not affect any liability which may have been incurred because of past operation under the order, WPB pointed out.

The revocation eliminates the previous requirements for the monthly filing by each producer of his production schedule on For WPB-949 and for a purchaser's statement with each order for tool steel placed with a producer.

M-21-h had provided that every purchase order for tool steel placed with a producer include a statement to the producer and to WPB that it was an order for "tool steel" and the steel ordered would be used only for the manufacture of tools for use in mechanical fixtures for cutting, shaping, forming or blanking of material, either hot or cold, or for precision gauges.

* * *

ANNUAL MEETING OF PACKAGING INSTITUTE

The annual meeting of the Packaging Institute is scheduled to be held in the Hotel New Yorker, New York, N. Y., November 1 and 2. Headquarters of Packaging Institute, Inc., are at 142 Madison Ave., New York.

* * *

MRO RATING AVAILABLE FOR MATERIALS FOR INSTALLATIONS

Any person assigned a maintenance, repair and operating supplies symbol (MRO) and rating under CMP Regulation No. 5 may use such rating to obtain materials to install or relocate machinery or equipment, the War Production Board reports. This action was taken by amending Direction 15 to the regulation.

Where construction is involved, officials said, persons may obtain materials needed for the installation or relocation of machinery or equipment that Direction 2 to

(*Continued on page 216*)

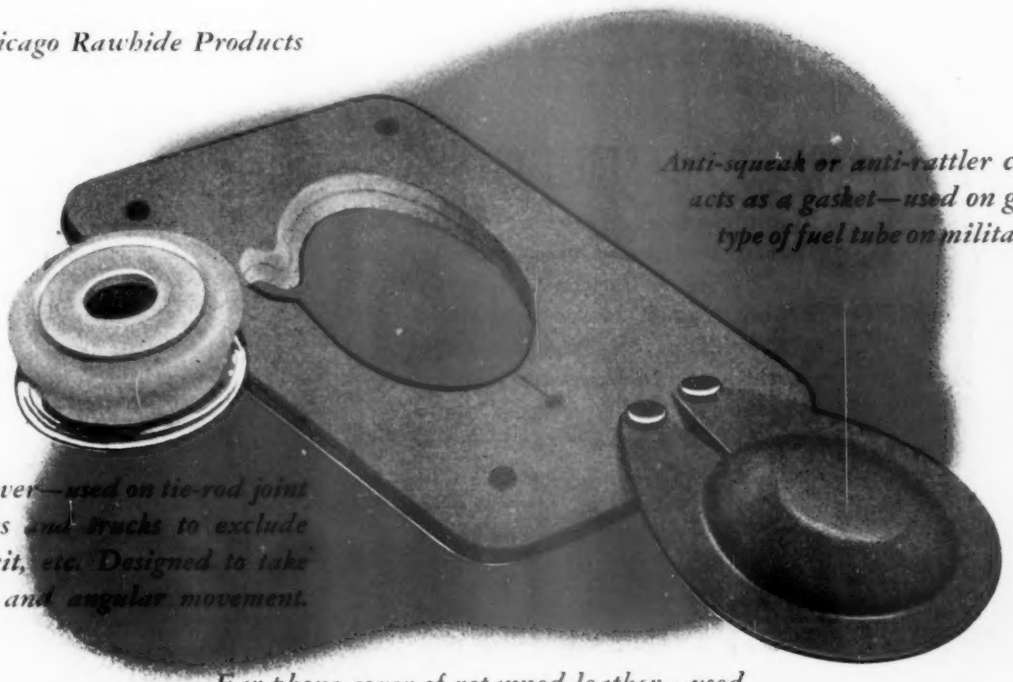
Do it better with Leather

LEATHER is in a class by itself! It has been the answer to many important problems of mechanical application in the past, will solve many more in the future.

Here at Chicago Rawhide—never content to let well enough alone, we are constantly seeking something better, improving old products and creating new ones, always looking ahead.

That is why—for 60 odd years, leading concerns, both large and small, have come to us with complete confidence. They know that our engineering, research and production experience assures them of the most efficient and best possible products for their specific requirements.

Interesting Chicago Rawhide Products



Anti-squeak or anti-rattler cover that acts as a gasket—used on goose-neck type of fuel tube on military trucks.

Boot or dust cover—used on tie-rod joint on automobiles and trucks to exclude dirt, sand, grit, etc. Designed to take both rotating and angular movement.

Ear phone cover of retanned leather—used by pilots, navigators, radiomen, etc.

CHICAGO RAWHIDE MANUFACTURING CO.

Established 1878

Manufacturers of Leather and Synthetic Rubber Products for Mechanical Application

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DETROIT • NEW YORK • PHILADELPHIA • LOS ANGELES • PITTSBURGH • BOSTON • PEORIA • SYRACUSE • CLEVELAND • CINCINNATI



JOMAC HEAT-RESISTING, LONG-WEARING GLOVES

They are proving themselves in hundreds of shops where workers must handle metals too warm to touch. The remarkable Jomac Fabric is a loop-finished cloth with air-cell "cushions" which allow breathing-space and an easy dissipation of heat. Jomac's loop finish gives extra protection to hands, extra *long wear.*

JOMAC REGULAR INDUSTRIAL GLOVES



A modern work-glove that is semi-heat resisting and gives as much as *7 times the service* of ordinary work gloves. Jomac Fabric and its hidden lock-stitch keep the thick pile in place and provide extra strength and wear. Jomac Gloves can be washed repeatedly, *kept clean* . . . and thus minimize the dangers of dermatitis and other skin infections.

TEST THEM!

Just try JOMAC GLOVES on your stiffest jobs. Test them for heat-resistance, for wear, for washability, for economy, for *increased production.* Write for full details.

JOMAC WORK GLOVES

C. WALKER JONES CO.

6135 N. Lambert St., East Germantown, Philadelphia 38, Pa.

(*Continued from page* 214)

Order L-41 (Construction) permits them to install or relocate without obtaining an authorization from the War Production Board.

If construction is not involved, materials valued up to $500 may be obtained to install any piece of machinery or equipment rated or authorized by WPB, officials said.

SYNTHETIC ORGANIC SOAPS UNDER ALLOCATION

To assure more equitable distribution of synthetic organic soaps to industry, the War Production Board has placed these soaps under allocation control, by the addition of Schedule 44 to Order M-300, the general chemicals order. This allocation control applies only to supplies for the military services and industry will continue to recive allotments in accordance with the established preference rating procedure. Priority ratings will be granted to industry for these soaps to be used in the production of rubber, textiles, dye stuffs, leather, metal, pulp and paper, insecticides, germicides and dairy cleaners and for special industrial purposes.

N E SPECIFICATIONS FOR HOT ROLLED FLAT CARBON STEEL ELIMINATED

National emergency specifications for hot-rolled flat carbon steel bars have been eliminated by an amendment to Schedule 15 to Limitation Order L-211, the War Production Board announces.

National Emergency specifications for steel products were established by WPB in order to get maximum production from steel mills during the war period by reducing the over-all number and specifications of products being made. However while other specifications with respect to hot-rolled bars will remain in effect, it has been found that the efficiency of mill operations will not be impaired by removing those applicable to flat bars, officials said.

RAILROAD DIRECTED TO REDUCE ORDERS FOR TRACK MATERIALS

The War Production Board has directed all railroad operators, except transit company operators, to reduce their purchase orders for track materials for the first half of 1945.

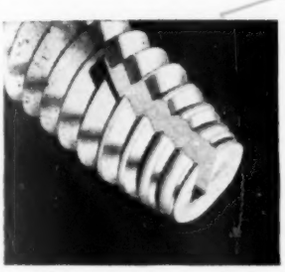
In Issuing Direction 4 to Order P-142, which controls railroad maintenance requirements, WPB instructed operators to reduce their orders for the first quarter of 1945 by 25 per cent and for the second quarter by 18 per cent.

Officials explained that these reductions had been made imperative because military requirements for overseas shipments of track materials, such as frogs and switches, have increased.

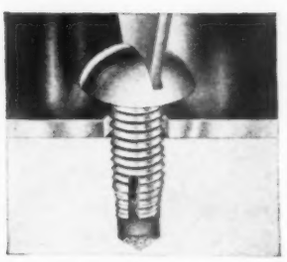
WPB advised the operators that 1945 orders for track materials, even if already placed with suppliers, must be reduced immediately to conform to today's WPB action.

6 Important Reasons

WHY YOU SHOULD USE SHAKEPROOF TYPE 1 THREAD-CUTTING SCREWS

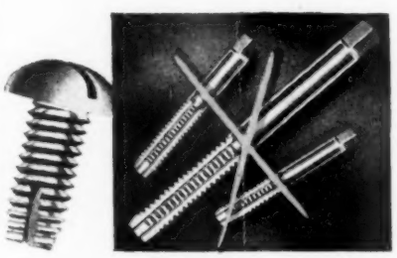


1 Exclusive Thread-Cutting slot provides sharp, serrated cutting edge.

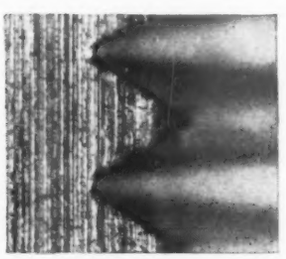


2 As each Type 1 is driven, it cuts its own perfect mating thread.





3 Eliminates tapping—no taps to buy or maintain.



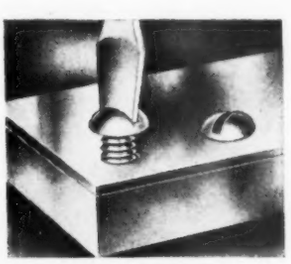
4 Snug, tight fit *always*, because each screw remains in the thread it has cut itself.

Plus THIS Specialized ENGINEERING SERVICE!

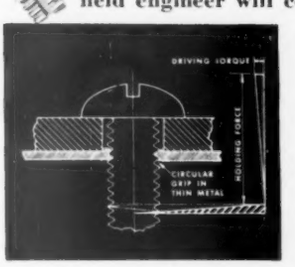
Through laboratory research and extensive field experience, Shakeproof engineers are in an excellent position to help you speed assembly, lower production costs and improve product performance. They thoroughly understand fastening problems and can recommend the type and method of fastening best suited to your particular product and to the requirements of your assembly line.

This Shakeproof Engineering Service is offered without obligation. Write today . . . a Shakeproof field engineer will contact you immediately!

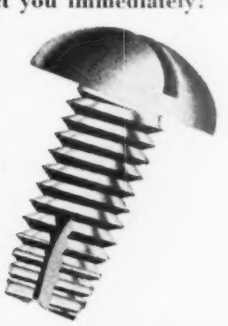




5 Drives easily in any thickness of metal.



6 Maximum thread contact assured because of standard machine screw thread.



SHAKEPROOF inc.

"Fastening Headquarters"

Distributor of Shakeproof Products Manufactured by ILLINOIS TOOL WORKS

2501 North Keeler Avenue, Chicago 39, Illinois

Plants at Chicago and Elgin, Illinois

In Canada: Canada Illinois Tools, Ltd., Toronto, Ontario

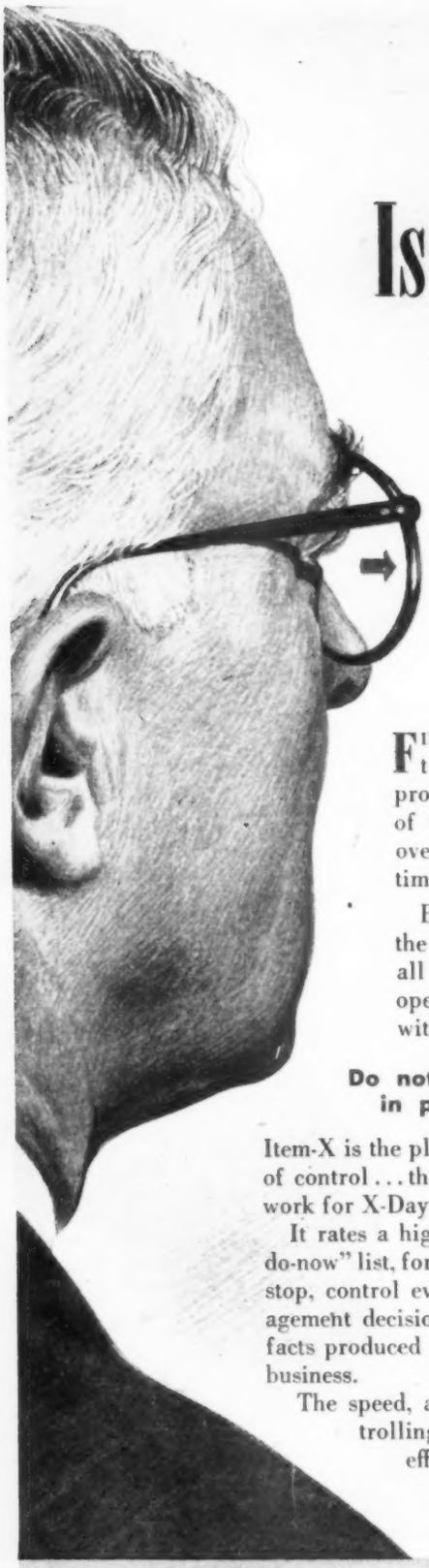
Los Angeles Office
5670 Wilshire Blvd., Los Angeles 36, Calif.

Detroit Office
2895 E. Grand Blvd., Detroit 2, Mich.

Free Test Kit

Kit contains a variety of sizes and styles of Shakeproof Type 1 Thread-Cutting Screws. Write today for Kit No. 22!





Is there a "Blind Spot" in your X-Day plans?...

FINANCING, markets, distribution, product engineering, processes, plant, personnel—none of these, chances are, has been overlooked in your careful peacetime planning.

But have you overlooked one of the things needed most—to power all these plans? To put them in operation smoothly, efficiently . . . without confusion and delay?

Do not overlook Item-X in plans for X-Day

Item-X is the planning of your record systems of control . . . the simplification of your paper work for X-Day.*

It rates a high priority on your "things-to-do-now" list, for a "piece of paper" must start, stop, control every physical operation. Management decision and action must depend on facts produced by all the record systems of a business.

The speed, accuracy and efficiency of controlling paper work will have a direct effect on the speed and success of your reconversion job when X-day arrives. More important—the success of all business in cutting nonproductive costs—through paper-work simplification and by means of planned systems of control—will have a most important bearing on peacetime employment and profits.

Production of "value" is the key to our free-enterprise system

It's the production of more goods at lower prices that produces buying power and jobs. Only by streamlining nonproductive costs out of price tags . . . by increasing what wages will *buy* . . . can America reach the economic goal it has set for itself. Profitable operation under these conditions demands cost control.

Studies by Standard's Representatives and their Formcraft Engineering staffs of analysts, designers and business machine specialists have demonstrated that a vast, almost untouched source of nonproductive-cost-cutting exists in almost every business.

Write, today, for timely, informative folder, titled: "Is There A Blind Spot in your X-Day Plans?" Also for sample Formcraft Digest and Check List. We think you'll find them valuable and enlightening. No obligation, of course.



"... no physical activity goes on in our modern age without a piece of paper moving along to guide it. That is often overlooked. That is a very necessary part of production of any size—the administration and planning of the paper work to control it, and get the planning and timing of it right..."

C. E. WILSON, President, General Motors Corporation

(from the testimony of Mr. Wilson before the Special Committee on Postwar Economic Policy and Planning of the House of Representatives)

THE STANDARD REGISTER COMPANY

Manufacturer of Record Systems of Control for Business and Industry

DAYTON 1, OHIO

Pacific Coast: Sunset McKee-Standard Register Sales Co., Oakland, Calif. Canada: Crain Printers, Ltd., Ottawa. London: W. H. Smith & Son, Ltd.

PRODUCTION EXECUTIVE

Office Equipment and Supplies

Monthly FORMS FORUM

Presenting a Purchasing and Handling System, Purchasing Order and Contract Form Used in Municipal Purchasing, and a Simple Purchasing Form

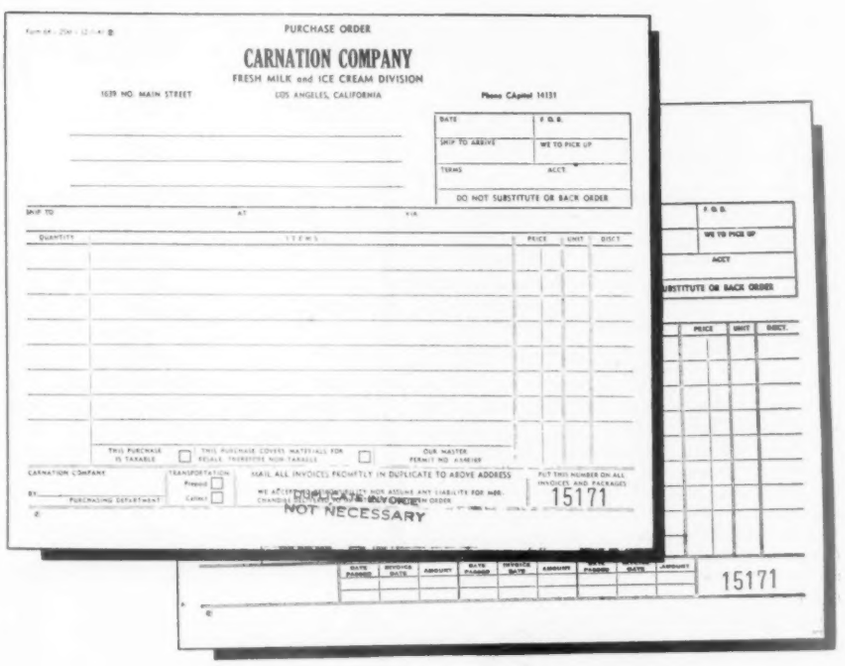
Purchasing System

G. L. MORGAN, Purchasing Agent, Carnation Company, Los Angeles, Calif., presents the following information and forms as a complete picture of the purchasing and handling system followed by his department.

The first of the forms is an inventory sheet, 10½" long by 4½" deep, on which a daily perpetual inventory is kept. The sheet carries receiving and withdrawal ("in" and "out") columns and a "Balance" column for each day's business. The bottom of the sheet provides space for the "Unit", its location in the warehouse, name or description and stock number, along with places for other pertinent data. These sheets are kept in book form constantly in reach of the Purchasing Department so that it is constantly aware of the balance on hand.

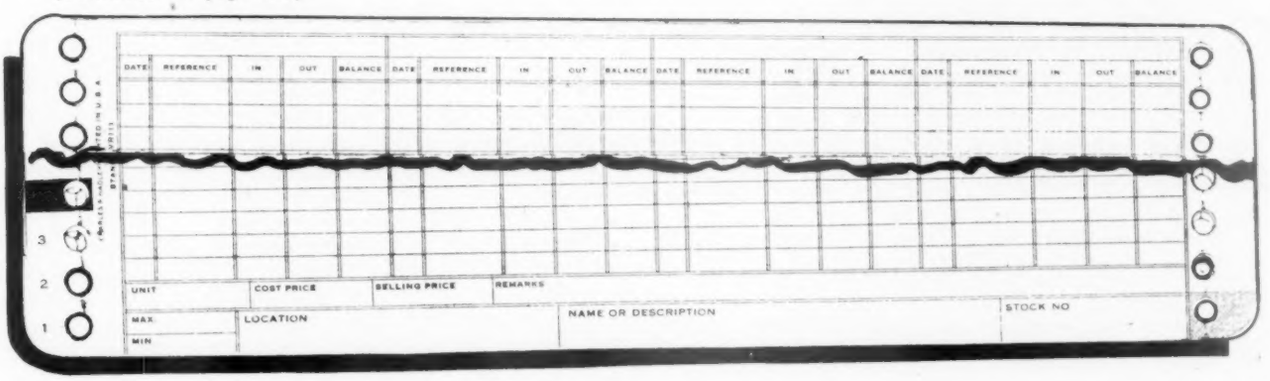
Directly opposite is the Purchase Order which is made in quadruplicate. The first copy goes to the supplier, the second copy is filed in accordance with War Production Board instructions on priority forms, the third copy goes to the Receiving Department where it is okeyed upon receipt of the merchandise and then attached to invoice and sent into the office. The fourth copy is retained by the Purchasing De-

(*Continued on page 220*)



Above, the Carnation Company's Purchasing Order. This is made in quadruplicate.

Daily perpetual inventory is kept on the form shown below. This form is 10½" x 4½".





EXPRESSION AS ENDURING AS A STRADIVARIUS

--A CL'ASSIC CONTRIBUTION TO BUSINESS WRITING

The eternally beautiful expression and tone fidelity of the Stradivari Violin is an everlasting contribution to the classics.

True to the creed of quality and beauty, Columbia offers a classic contribution to the world of business—Classic Ribbons for Electric Typewriters.

Classic's combination of sheer yet sturdy fabric and minutely-controlled ink film is expressed in terms of outstanding writing beauty and endurance. This combination is particularly adapted to the rigorous requirements of electrically-operated typewriters. And, since fine things endure, Classic Ribbons are economical.

Service in war industries has proved again and again the value of electric typewriters and Classic Ribbons. Eventually you will use both. But if you're using electric typewriters now, ask your dealer or the Columbia sales office nearest you for test-details and prices in Classic—the ribbon that makes electric typewriting better and more economical.



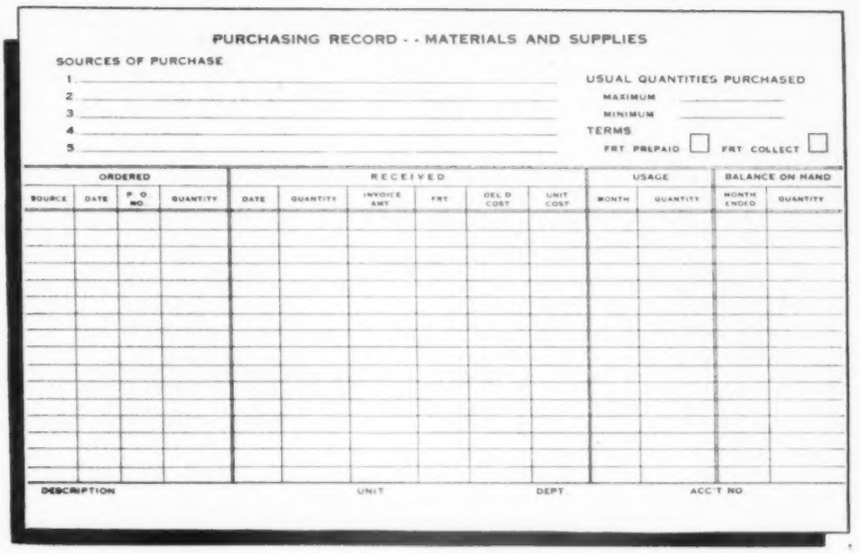
Classic

TYPEWRITER RIBBONS FOR ELECTRIC TYPEWRITERS

COLUMBIA
MANUFACTURING CO., INC.
RIBBON & CARBON
Main Office & Factory, Glen Cove, L. I., N. Y.

NEW YORK • KANSAS CITY, MO. • CHICAGO • DETROIT • MILWAUKEE • MINNEAPOLIS • NASHVILLE • PHILADELPHIA • PITTSBURGH • PORTLAND, ORE. • CINCINNATI

(Harris-Moers Company)
Also: London, England; Sydney, Australia



PURCHASING RECORD - - MATERIALS AND SUPPLIES

SOURCES OF PURCHASE
1.
2.
3.
4.
5.

USUAL QUANTITIES PURCHASED
MAXIMUM
MINIMUM
TERMS
FRT. PREPAID ☐ FRT. COLLECT ☐

ORDERED				RECEIVED						USAGE		BALANCE ON HAND	
SOURCE	DATE	P. O. NO.	QUANTITY	DATE	QUANTITY	INVOICE AMT	FRT	DEL'D COST	UNIT COST	MONTH	QUANTITY	MONTH ENDED	QUANTITY

DESCRIPTION UNIT DEPT. ACC'T NO.

Carnation Company's Purchase Record Forms



PURCHASE RECORD

NO.	VENDOR	ADDRESS	NO.	VENDOR	ADDRESS
1			5		
2			6		
3			7		
4			8		

DATE	FROM	ORDER NUMBER	QUANTITY	GROSS PRICE AMOUNT	GROSS PRICE UNIT	TRADE DISCOUNT	NET PRICE	F. O. B.	TERMS	EX. OR EXT.	CHARGE ACCOUNT	REMARKS

(Continued from page 219)

partment for reference.

Next is the "Purchasing Record—Materials and Supplies". This is for maintaining a record of necessary information as to the source of supply, maximum and minimum quantities purchased, terms, and freight prepaid or collect. Next there is information as to date and quantity ordered, and received, unit cost and monthly usage. This data is columned under the four headings "Ordered", "Received", "Usage", and "Balance on Hand", completing the record.

This form is accompanied by a copy of "Purchase Record".

County Purchasing

MUNICIPAL Purchasing Agents will find of especial interest the Purchase Order form and contract form submitted by George L. Wilson, Purchasing Agent, Commission of Jefferson County, Alabama, and his letter which follows:

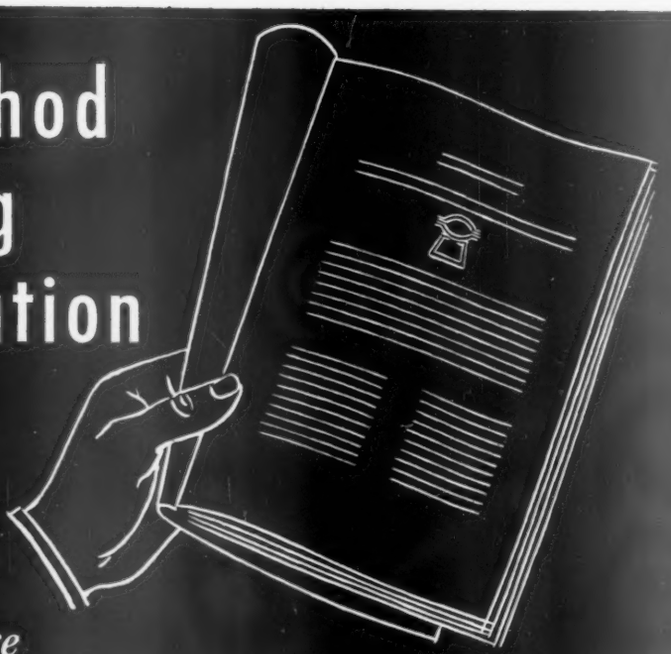
"This department was established in 1938 and I can truthfully state that we are continually conducting a study of purchasing forms and have benefitted materially from the ideas we have gathered from other purchasing departments. Printed forms will always grow and change as the procurement system increases its responsibilities and its efficiency.

"The Purchase order we are currently using has resulted from a streamlining of the order forms of a number of states and cities and industrial companies.

"It appeals to us because it provides space for more items than most order forms. This is important to us because many of our orders for our hospitals,

(Continued on page 226)

A simple method of handling Contract Termination Paper Work



New Booklet gives step-by-step procedure

When you receive notification of contract cancellation, it is imperative that your organization be set up to submit claims quickly, completely and authentically.

Our new easy-to-read booklet, THE A B C OF CONTRACT TERMINATION, not only gives basic suggestions for the establishment of your contract termination organization, it also sets down a complete and practical method of handling the paper work involved, with illustrated sample forms that can be easily adapted to your requirements.

This method, based on the use of the Mimeograph* duplicator, permits you to set your termination machinery in motion within one hour after receipt of the notification telegram. This is of great importance, because it eliminates rewriting of constant data, thereby insuring accuracy and speed.

It enables you to meet government requirements, and provides black and white, fade-proof, permanently legible copies.

Send for your free copy of this booklet today, and be in a position to handle claims without sacrifice of time, money or available markets. The coupon is for your convenience.

A. B. Dick Company, Chicago.



Mimeograph duplicator

*MIMEOGRAPH is the trade-mark of A. B. Dick Company, Chicago, registered in the U. S. Patent Office.

A. B. Dick Company, Dept. P-1044, 720 W. Jackson Blvd., Chicago 6. Send me a free copy of your booklet, "The A B C of Contract Termination."

NAME.....

COMPANY.....

ADDRESS.....

CITY.....STATE.....

COPYRIGHT 1944, A. B. DICK COMPANY



5¢ *each less in quantities*

EAGLE "Chemi-Sealed" (SUPER BONDED) MIRADO

FOR FREE SAMPLE

Write on your business letterhead, naming this magazine, your dealer, and the grade you desire: 1—Soft, 2—Med. Soft, *2½ True Medium 3—Med. Hard, 4—Hard

EAGLE PENCIL COMPANY, 703 E. 13th St., New York

EAGLE PENCIL COMPANY OF CANADA, LTD., TORONTO

*Reg. U. S. Pat. Off. See U. S. Pat. Off. Regs. including Nos. 51020, 315089, 317526, 343187

INDUSTRIAL METAL FURNITURE MAY BE SOLD WITHOUT AUTHORIZATION

Types of metal furniture and fixtures that are permitted to be made for industrial purposes under Limitation Order L-13-a may be sold without specific authorization from the War Production Board, WPB announced.

The permitted types are steel seating equipment designed for use at a workbench or production machine, steel work benches that are required for safety, steel foremen's desks, shop boxes, stacking boxes, tool cases and tool room shelving inserts.

L-13-a, as amended today, also permits manufacturers to fill orders for not more than $25 worth of any type of metal furniture and fixtures without specific WPB authorization.

* * *

CEILINGS APPLY ONLY TO 500lb WASTEPAPER BALES

Twenty-one industrial grades of wastepaper when packed in machine compressed bales may be sold regardless of the weight of the bale at ceilings heretofore applicable only if each bale weighed at least 500 pounds, the Office of Price Administration announces.

This action was taken at the request of the industry, which has shown that it is customary to pack these grades in bales smaller than 500 pounds. Accordingly, existing ceilings are maintained, with the bale weight requirement eliminated.

The 21 grades affected are: New Corrugated Cuttings, Boxboard Cuttings, White Blank News, New Manila Envelope Cuttings, One Cut New Manila Envelope Cuttings, Manila Tabulating Cards Free From Groundwood, Manila Tabulating Cards Groundwood, No. 1 Hard White Shavings, Hard White Envelope Cuttings, One Cut Hard White Envelope Cuttings, No. 1 Soft White Shavings, One Cut Soft White Shavings, Miscellaneous Soft White Shavings, No. 1 Fly Leaf Shavings, No. 1 Groundwood Fly Leaf Shavings, No. 2 Mixed Colored Groundwood Shavings, No. 1 Assorted Kraft (old Kraft), Triple Sorted No. 1 Brown Soft Kraft, Mixed Kraft Envelope and/or Bag Cuttings, Kraft Envelope Cuttings, and New 100 Per Cent Kraft Corrugated Cuttings.

The 500-pound baling provision on the ten other grades of wastepaper continues in effect, industry concurring that there should be no change in this requirement on these grades. Another change made today results in an increase of $3 per ton in the ceiling price of Mixed Books when sold as wastepaper for use in the manufacture of paperboard. A former provision has been eliminated, which required that Mixed Books must take the ceiling price of No. 1 Mixed Paper when sold to paperboard manufacturers. Ceilings on Mixed Books are $17 per ton when sold loose and $22 per ton when sold in 500-pound bales. Ceilings on No. 1 Mixed Paper are $14 per ton when

(*Continued on page* 224)

My dear Son Zenas:

James and I are still benefiting from our sojourn here and your reassuring letter makes it easier to prolong our stay. I think he would rather be with you, helping in the mill, than in keeping me company, but it is good to have him with me and we know that you will keep things moving along in good order.

The sample you sent us of the last lot of Fines you made is clear and crisp and shows that the stuff was beaten carefully and slowly. I was brought up in the school of paper-making that counted care and skill the essence of quality, and I am glad that you and your brother so regard them. Short cuts and substitutes never pay.

As pleased as I am with the steady growth of our business, I am more gratified with the way we have held fast to our standards while adapting new ways and methods of manufacture. I should not want to go back to the laborious forming of a sheet of paper in my hand mould, couching it on felt, and removing the water by the big press. But I hope all the paper we ever make will bear the mark of such craftsmanship as do the Fines you have just made.

You see by all I have said here that I have time on my hands, but getting away from the mill helps me to see it more clearly and take fresh pride in what we do there.

I am glad the repairs and improvements I wrote you about are under way and I know I shall be well satisfied with them.

Give my love to the family and remember me to all at the mill.

Yours, etc.

Saratoga, 30 August 1838 *ZENAS CRANE*



Zenas Crane's hand mould may be seen in the Crane Museum in Dalton, but the standards of quality he established in 1801 and which have been adhered to with the utmost fidelity through all these years are to be found in every sheet of Crane's Paper you use or possess. Made now — as then — from cotton and linen fibres only, Crane's is the first choice for letters, documents of record, tokens of value, and many war-time needs, chief among them the War Bonds you buy in aid of your country and for your future freedom and security.

CRANE'S FINE PAPERS • MADE IN DALTON, MASSACHUSETTS • SINCE 1801

This Rediform System SAVES $3,000 PER YEAR!

A large, nationally known manufacturer of heavy machinery experienced trouble with a "balky" Parts Requisition system. Each of the seven copies of this Requisition had to be individually imprinted on an addressing machine, and later collated into sets and stapled together. Carbon was then inserted between the sheets, additional information was typed in, and carbons were removed and the sets separated. All this proved cumbersome and inefficient, and the margin for error was great.

The local Rediform man was called in to study the problem and he quickly spotted the time-wasting factors. After making a complete survey of the situation, he was able to design a new form that eliminated every non-productive operation. Seven machine operations were cut to one and the collating, stapling, and the insertion and removal of carbons were completely eliminated.

This manufacturer figures that this new REDIFORM system cut the annual cost of this operation by approximately $3,000.

This is not an isolated case but rather one that is typical of the jobs being done every day by Rediform Systems Engineers. The same type of TIME and MONEY SAVING systems can be created for you; for all the Key Operations of your business.

Interested?

Write us on your business letterhead for folder describing above system. Address your request to Department 70.



REDIFORM
TIMESAVING BUSINESS FORMS AND SYSTEMS

AMERICAN SALES BOOK CO., INC. Subsidiary of Moore Corp., Ltd. NIAGARA FALLS, N. Y.

(*Continued from page 222*)

sold loose and $19 per ton when sold in 500-pound bales. This action has been taken to eliminate the discouragement of shipments of Mixed Books to paperboard manufacturers because of the price ceiling. Since the function of allocation properly falls within the jurisdiction of the War Production Board, OPA said that it had determined such matters should be left to that agency.

(Amendment No. 9 to Maximum Price Regulation No. 30 wastepaper.)

ADAMS AND HULBURD NAMED TO NEW POSTS BY VICTOR

M. S. Bandoli, vice president in charge of distribution for the Victor Adding Machine Company, has announced the appointment of K. A. Adams and F. C. Hulburd to two newly created posts.

K. A. Adams, a former District Manager, and more recently in charge of the



K. A. Adams



F. C. Hulburd

St. Louis Office, becomes special assistant to the vice president. In his new capacity, he will work on special sales assignments. Before joining Victor four years ago, Mr. Adams was associated as a distributor and as a field executive with manufacturers in the home appliance field, and brings a rich background of sales experience to his new work.

F. G. Hulburd is a former director of advertising and sales promotion, and more recently, manager of the company's Washington, D. C. office. In his new assignment, he will concentrate on Government contracts and serve as liaison man between Victor and the many governmental departments on all matters pertaining to Government business both in connection with sales and war production.

Before joining Victor, Mr. Hulburd was associated with several organizations in the home appliance and specialty field, where he served in various sales and executive capacities. This background makes him particularly well-fitted for his new assignment.

R. S. DOW MADE PACIFIC MANAGER FOR I. B. M.

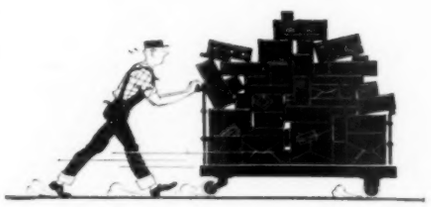
Ralph S. Dow, of Oakland, California, has been promoted to the position of Pacific manager for the International Business Machines Corporation, New

(*Continued on page 228*)

Problem No. 1: LIQUIDATING "FROZEN ASSETS"



KARDEX visible record control speeds DISPOSAL OF SURPLUS materials and parts



AIRCRAFT PRODUCER

clearing 100,000-item stock

This leading midwest manufacturer operates a "Disposal Service"—that effectively finds buyers within and outside the aircraft industry. *Kardex Visible* Inventory Records provide speedy reference to inquiries received, facilitating profitable action at minimum operating cost.

U. S. FIGHTING SERVICE

reproduces stock records for catalog

Direct photolithography of actual inventory record provides a really up-to-the-minute catalog of surplus items which is sent out to prospective purchasers periodically. A highly-efficient procedure—easy with *Index Visible Records* showing actual stock status of each item on the *visible* margin.

Necessity of disposing promptly of surplus stocks of materials, parts and tools faces business today.

Whether such "frozen" stocks are due to design changes or Government contract terminations, they threaten to become a serious drag on operations during the critical reconversion period.

In the one case the company's own capital may be represented. In the other, even though title to such material usually passes to the Government if disposal action is not taken, the cost involved becomes part of the contract settlement and for various causes final payment may be postponed for many months.

Farsighted organizations are taking the aggressive action that means prompt realization of the funds invested in these items. While there is still a definite and often a very active market, they are offering and selling these materials at prices that may not be obtainable later on.

To effect such disposal with the greatest efficiency and at the least cost, Remington Rand visible systems have proved time and again to provide the ideal method of record control. With prospects developed and prices offered permanently, and visibly recorded, company officials and contracting officers can take prompt and profitable action.

We will gladly lend *to responsible executives a detailed and comprehensive study of Termination Procedures prepared for our salesmen's use by our Systems Research Division. This study is not for sale. Ask our nearest Branch Office for a copy.*

COPYRIGHT 1944

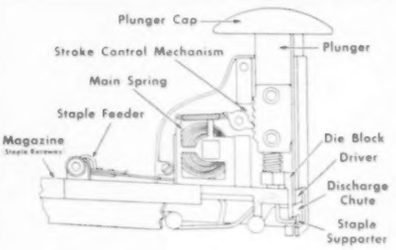
SYSTEMS DIVISION

REMINGTON RAND

Buffalo 5, New York

"Inside Story" of

ACE STAPLERS





ABOVE

Side view with headhousing cut open showing working parts. All-steel construction. Triple plated.

AT LEFT

Front view showing famous closed front. Precision built throughout.

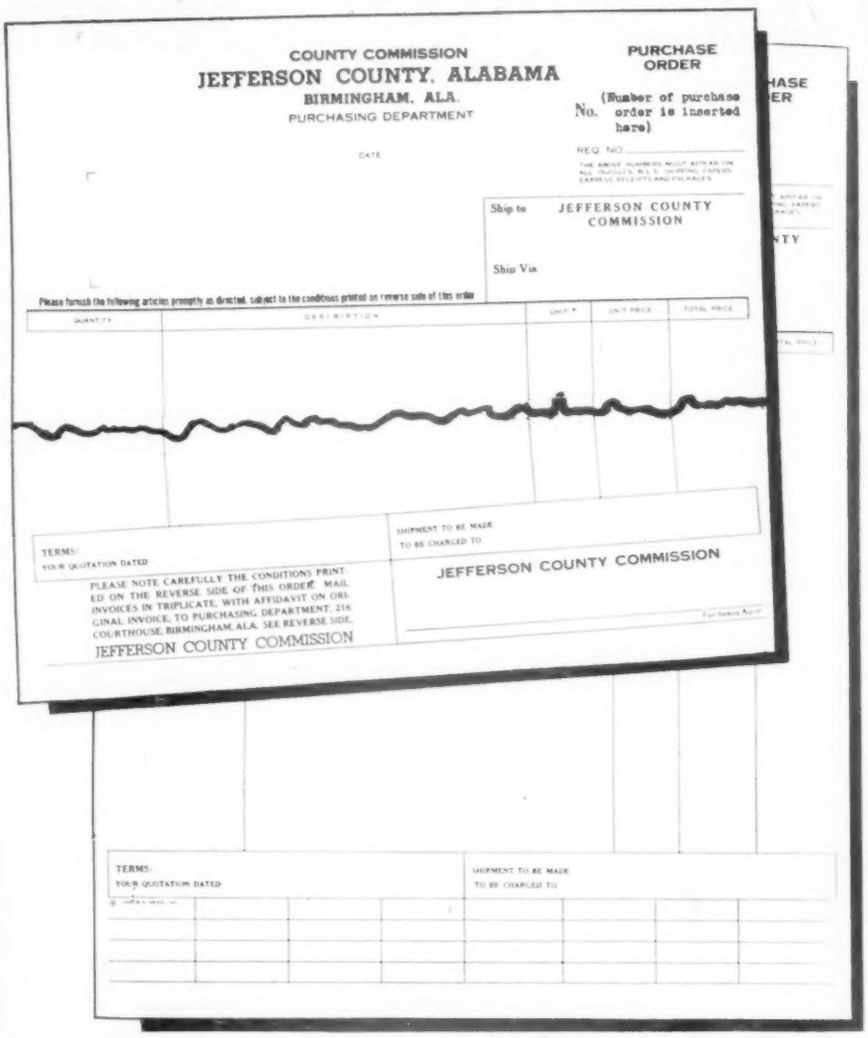


Also Ace Scout $1.00 and Ace Clipper $4.50. All-steel, prewar construction.

Most purchasing agents are technically trained, many are engineers. With such a background plus a world of experience these men know a good piece of mechanism when they see it. That's why Ace Staplers have been so popular with purchasing agents for so many years. Each Ace Stapler part is made with watch-like precision, by skilled workmen, from finest materials. That combination gives these better machines smooth, easy, dependable operation, ruggedness for a lifetime of satisfactory service. *Shipments allocated to those qualifying with priority ratings.* SOLD ONLY THROUGH DEALERS.

ACE FASTENER CORPORATION
3415 North Ashland Ave., Chicago 13, Ill.

ACE The WORLD'S FINEST *Stapling Machines*
FOR EVERY PURSE AND PURPOSE



COUNTY COMMISSION
JEFFERSON COUNTY, ALABAMA
BIRMINGHAM, ALA.
PURCHASING DEPARTMENT

PURCHASE ORDER
No. (Number of purchase order is inserted here)

DATE

REQ. NO.

Ship to JEFFERSON COUNTY COMMISSION

Ship Via

Please furnish the following articles promptly as directed, subject to the conditions printed on reverse side of this order

QUANTITY | DESCRIPTION | UNIT # | UNIT PRICE | TOTAL PRICE

TERMS:
YOUR QUOTATION DATED

SHIPMENT TO BE MADE
TO BE CHARGED TO
JEFFERSON COUNTY COMMISSION

PLEASE NOTE CAREFULLY THE CONDITIONS PRINTED ON THE REVERSE SIDE OF THIS ORDER. MAIL INVOICES IN TRIPLICATE, WITH AFFIDAVIT ON ORIGINAL INVOICE, TO PURCHASING DEPARTMENT, 216 COURTHOUSE, BIRMINGHAM, ALA. SEE REVERSE SIDE.

JEFFERSON COUNTY COMMISSION

(*Continued from page* 220)

repair shops, and other county institutions are made up of a great number of items. Because most of the space on the face of the order is available for these items, we write fewer orders. Our suppliers, likewise, are better able to handle the one order than several sheets of items. We make six copies regularly at present, distributed as follows: Vendor, Accounting Department, Purchasing Department, Department Head, Budget Copy and Departmental Copy.

"Another form we use to good advantage is an informal contract form or

(*Continued on page* 230)



Form 10—9-43—200 Beta

CONTRACT
BETWEEN
Jefferson County Commission
PURCHASING DEPARTMENT
AND

GEORGE L. WILSON
PURCHASING AGENT

1 VENDOR'S COPY

DATE

Contract (Number of contract is inserted here)

INQUIRY NO.
DATE OF INQUIRY
MATERIAL OR SERVICE
TERMS OF PAYMENT

THIS IS NOT AN ORDER:- THIS CONTRACT IS BEING AWARDED BY THE COUNTY COMMISSION ON THE BASIS OF YOUR PROPOSAL SUBMITTED IN CONNECTION WITH OUR INQUIRY REFERRED TO ABOVE. PURCHASE ORDERS WILL BE ISSUED ONLY AS THE REQUIREMENTS OF THE DEPARTMENTS ARE SUBMITTED TO THE PURCHASING AGENT.

IT IS UNDERSTOOD AND AGREED THAT THE COUNTY MAY PURCHASE ANY OR ALL OF ITS REQUIREMENTS FOR DELIVERY AS NEEDED AT THE PRICES AND UNDER THE TERMS INCLUDED IN THIS AGREEMENT.

ALL MERCHANDISE AND SERVICE MUST BE SATISFACTORY TO THE COUNTY AT ALL TIMES. FAILURE TO CONFORM TO OUR SPECIFICATIONS, OR TO ANY OF THE TERMS OF THIS AGREEMENT, SHALL CONSTITUTE SUFFICIENT GROUNDS FOR THE CANCELLATION OF THE CONTRACT UPON WRITTEN NOTICE FROM THE COUNTY COMMISSION OR ITS AGENT.

THE COUNTY IS TO BE GIVEN THE BENEFIT OF ANY REDUCTION IN PRICE BELOW THE CONTRACT PRICE, SAID REDUCTION TO APPLY ON THE UNDELIVERED PORTION OF THE CONTRACT.

COMMUNICATE WITH US AT ONCE SHOULD THERE BE ANY QUESTION AS TO THE CONDITIONS OF THE AGREEMENT OR IF THIS MEMORANDUM SEEMS CONTRARY IN ANY WAY TO YOUR PROPOSAL.

PERIOD OF CONTRACT: FROM TO


Better
Wonder
BALANCED
Carbon Paper
PAR
KEE LOX
NEW PROCESS CARBON
EACH SHEET TRADEMARKED
SUPREME IN MANIFOLDING
MARVELOUS IN WEAR
HIGHEST EFFICIENCY
CREATES NEEDFUL ECONOMY
The most wonderful sheet of Carbon ever produced because its wear is phenominal, thus saving money and creating Economy. Made in the FOUR above Brands each in FOUR weights and FIVE distinct finishes to give perfect results.
KEE LOX 1944 DUPLICATOR CARBON leads the World in perfect results from all machines in strong Copies and long runs. Send for free Samples of New Process and Duplicator to any of the offices listed below.
KEE LOX MFG. CO., ROCHESTER 1, N. Y., U. S. A.
Branches in Atlanta, Baltimore, Birmingham, Boston, Chicago, Cincinnati, Cleveland, Dallas, Denver, Detroit, Houston, Indianapolis, Jacksonville, Kansas City, Los Angeles, Louisville, Memphis, Milwaukee, Minneapolis, New Orleans, New York, Omaha, Philadelphia, Pittsburgh, Portland (Oregon), Rochester (New York), St. Louis, Salt Lake City, San Francisco, Seattle. Toledo, Tulsa; Buenos Aires, Havana, Sydney, or to Export Dept. Rochester 1, N. Y.

BYRON WESTON CO. LINEN RECORD, EXTRA NO. 1 100% DEFIANCE LEDGER 100% WAVERLY LEDGER 75% CENTENNIAL LEDGER 75% WINCHESTER LEDGER 50% BLACKSTONE LEDGER 25% WESTON'S MACHINE POSTING LEDGER AND INDEX 50%

DEFIANCE INDEX 100% WINCHESTER INDEX 50% WESTON'S BOND EXTRA NO. 1 100% DEFIANCE BOND 100% HOLMESDALE BOND 75% WINCHESTER BOND 50% BLACKSTONE BOND 25%

PROJECTILES
as well as
PROJECTS



are launched with
WESTON PAPER

Among the deadliest of new developments for the destruction of our enemies is the rocket or "Bazooka" projectile, launched not only from our warplanes but from tanks, PT boats, landing craft and the like. The launching tubes for the "Aerial Bazooka" called for a material combining lightweight with extraordinary strength, flexibility, resilience and endurance. Such a material is being produced by the General Electric Company Plastics Divisions manufactured from a special absorbent 100 per cent cotton fibre paper which has proven ideal for the purpose. The paper was developed in the Weston laboratory and made in the Weston mills.

A far cry, perhaps, from the WESTON papers on which many a post-war project will be launched — many a vital record, document and communication presented and preserved. But out of our experience in the development and production of papers for this and many other critical war uses will come papers more than ever justifying the recommendation that your supplier has been making for many years

if it's worth keeping, keep it on a WESTON *Paper*

BYRON WESTON COMPANY
DALTON, MASSACHUSETTS

WESTON PAPERS · PROTECT YOUR RECORDS

Makers of PAPERS *for* BUSINESS RECORDS

EVERY WESTON PAPER IS A COTTON FIBRE CONTENT PAPER

(*Continued from page* 224)

York, N. Y. For the past seven years, Mr. Dow has served as the company's electric accounting machines manager in Oakland. In his new position, making his headquarters at San Jose, California, where IBM operates one of its five domestic manufacturing plants, Mr. Dow will be jointly responsible with Roger R. Williams for the operation of the plant and, in addition, he will be responsible for the operation of all of the company's offices west of, and including, Denver, Colorado.

For some time Mr. Dow was employed in the Los Angeles Department of Water & Power before he became associated with IBM as a salesman in that city in 1929. He served there until he was made manager of Oakland in 1937.

DIEBOLD PLANS FOR POSTWAR OPERATIONS

Personnel changes looking to post-war operations have been announced by Eliot Ness, chairman of the board, Diebold, Inc., Canton, Ohio. George Bockius, director of purchases, was made executive



George Bockius

vice president; Howard Noble, vice president, was made special assistant to the executive vice president, and A. Wayne Jackson was named general sales manager. This expansion was suggested by President Adolph J. Roos as part of a long range plan which the company has in mind for adding new lines of production as soon after victory as conditions will permit. Much of the new production is reported to have passed the designing stage.

Elmer W. Nelson, formerly manager of the New York Branch, has been appointed Eastern Division sales manager, and Myron Stouffer is moved from San Francisco to become New York branch manager. He is succeeded by Karl Knochenhauer as San Francisco branch manager.

FRIDEN APPOINTS ADVERTISING DIRECTOR

H. A. Richardson has been made advertising director for the Friden Calculating Machine Co., Inc., of San Leandro, Cal. Announcement is also made that the name of the company's house magazine "The Aristocrat" has been changed to "Friden Supermatic News."

FRIDĒN

FULLY AUTOMATIC CALCULATOR



Visible Fully Automatic Multiplication...*a patented Fridēn Feature, makes completely Automatic Multiplication a reality.*

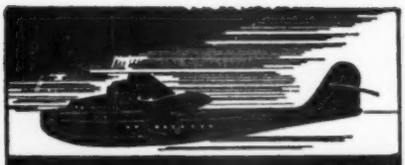
Set either factor of any Multiplication problem on the Keyboard. Then enter the other factor in the Multiplier. For either Positive, Negative or Accumulative Multiplication just touch ONE KEY...and presto, the Carriage is automatically positioned, the Dials automatically cleared, the Calculator automatically counts and shifts until the problem has been completed...then finally clears the Keyboard preparing the machine for any subsequent calculation.

Fridēn Calculators are AVAILABLE when applications for deliveries have been approved by the War Production Board. Telephone or write to your local Fridēn Representative for complete information.

Fridēn Mechanical and Instructional Service is available in approximately 250 Company Controlled Sales Agencies throughout the United States and Canada.

FRIDĒN CALCULATING MACHINE CO., INC.

HOME OFFICE AND PLANT • SAN LEANDRO, CALIFORNIA, U.S.A. • SALES AND SERVICE THROUGHOUT THE WORLD



THIN PAPERS
Reduce
TYPING, MAILING
and FILING COSTS
Specify one of
ESLEECK
THIN PAPERS
Ideal for Air Mail, Branch Office and Foreign correspondence.
ESLEECK MANUFACTURING COMPANY
TURNERS FALLS, MASSACHUSETTS

ROLL PAPERS
FOR ANY MAKE OF BUSINESS MACHINE



Cost You Less Through Burroughs Discount Purchase Plans

Burroughs special-formula roll papers give sharp, clean-cut type impressions. Available plain or carbonized; single or double wound; in any size or width. Save money on cash register check rolls and detail rolls, adding, accounting and other business machine roll papers, through Burroughs Discount Purchase Plans. Call your local Burroughs office or write direct to Burroughs Adding Machine Company, Detroit 32, Michigan.

Burroughs
SUPPLIES FOR BUSINESS MACHINES

(*Continued from page 226*)

"Requirement Contract." This follows acceptance of a supplier's bid in response to our inquiry for prices on our requirements for the entire county of some commodity, group of related commodities, or some service. This form was originally copied from one in use by the City of Cincinnati and has been adapted to the county's purpose.

"The period of contract is usually twelve months, with an optional agreement often included by which the contract may be extended for a like period of mutually agreeable to both the county and the supplier. Of course all such conditions must be included in our inquiry for our requirements.

"We have found this plan of contracting for many items in general use enables us to secure fair prices and better service from our vendors. They are assured of our business and we have received better deliveries and lower costs as a consequence.

"The importance of good, understandable printed forms cannot be overestimated."

Purchase Order Form

HERE is copy of Purchase Order form used by the Haydon Manufacturing Co., Forestville, Conn. Purchasing Agent E. A. Diemand, commenting upon the simplicity of the form, writes as follows:

"My experience has been that most concerns put altogether too much information on the purchase order and most of this is not necessary. On some of the purchase order forms it would take an order clerk or sales manager an hour or two to digest all of the fine print on the back of the order and when it is all added up it amounts to exactly zero.

"I am enclosing a copy of the purchase order form which we use. This is simple and direct. When the W. P. B. or some other Government agency issues a rule or regulation in connection with the purchase of a certain critical material, this is covered by a small rubber stamp and the information is stamped on the face of the order.

"The original of this order goes to the vendor. The second copy goes to the purchasing department file in alphabetical order. The third copy is used as a follow-up copy. This goes in the follow-up file in alphabetical order and it is brought to my attention on the due date. The next copy goes to the financial department. The fifth copy is used to record our purchase commitments by dollar value. This is important because it tells us at the end of each month just how much has been expended or committed for. The last copy goes to the receiving department.

"On the follow-up copy, after the order has been completed and there is any correspondence in connection with the order, all of the correspondence is together. This correspondence is then removed from the follow-up file and a pencil notation written on the order, giving the completed date. This is then transferred to a closed file and filed by vendor.

PURCHASE ORDER

FROM

HAYDON MANUFACTURING CO., INC.
Forestville, Conn.

TO

This Number MUST Appear On All Packages, Invoices, etc. No. 7775

Date
Req. No.
Acc. No.
Dept. No.
Ship Via
F.O.B. Point
Terms
Delivery

QUANTITY	PLEASE ENTER OUR ORDER IN ACCORDANCE WITH PRICES, DELIVERY AND SPECIFICATIONS GIVEN	PRICE

Enclose Shipping Memo with Shipment and Invoice in Duplicate

The right is reserved to cancel order if reasonable shipment cannot be made. If you cannot meet the shipping date let us know at once.

HAYDON MFG. CO., INC.

By

(*Continued on page 232*)



Which One Is Forced to Waste Time?

Don't blame poor Miriam because she is always involved in a carbon mess. How would you like to wrestle with ink-smearing carbon sheets . . . stuffing them in and out, in and out?

And it is such a needless procedure, now that you can get modern, up-to-date Uarco **continuous-strip** record forms. Forms that have the carbons neatly interleaved . . . eliminate time-wasting carbon fuss and bother. You'll be surprised at what that means in time-saving efficiency. For Uarco puts an end to repetitive actions by routinizing the tedious job of record keeping.

Uarco records are more than mere forms. They are functional business tools that give the how, where, and when of every business transaction at any given moment . . . keep the work moving smoothly with a minimum of trouble. Uarco records are designed either for handwritten or machine-written use. They may be carbon interleaved or non-interleaved; may be used in a Uarco Autographic Register, typewriter, billing or tabulating machine.

For over 50 years, Uarco has been supplying better record forms to business. We will consider it a pleasure to work with you on your individual record keeping problem. It will cost you nothing to have a Uarco representative call today.

UNITED AUTOGRAPHIC REGISTER COMPANY
Chicago, Cleveland, Oakland • *Offices in All Principal Cities*



AUTOGRAPHIC REGISTERS



SINGLE SET FORMS





CONTINUOUS-STRIP FORMS FOR HANDWRITTEN • TYPEWRITTEN • BUSINESS MACHINE RECORDS

UARCO

BETTER BUSINESS RECORDS

Everyday all over America

Parsons Paper

Specialized for Modern Business

— is stepping up production. Faster and better paper work is being turned out because these quality papers increase clerical efficiency.

STAR Stapler

THE BEST WAY TO FASTEN PAPERS





Star Staplers are needed on every desk. They use less steel to fasten papers than other methods of fastening. They are built to last and are guaranteed against defects. Essential industries can still be supplied. Model S 122 A shown above lists for only $1.90. *Write for Catalog.*

He'll get your letter without fail
If you will send it by V-MAIL

STAR ★ PAPER FASTENER CO.

DEP'T P., NORWALK, CONN.

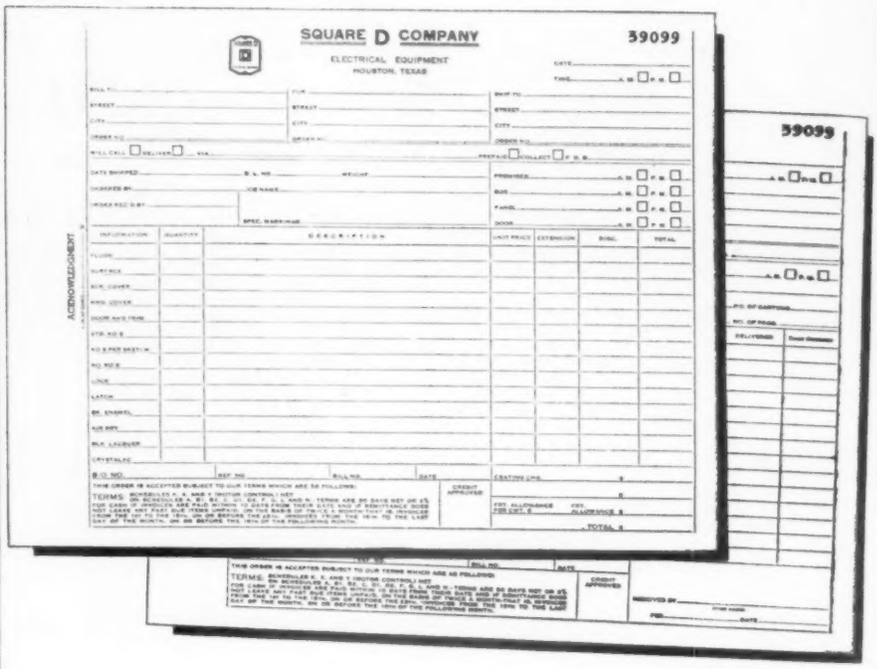
(*Continued from page 230*)

"This system enables us, without too much red tape, to have any and all information at our finger tips when it is needed. In other words, if any of the officers of the company want any particular information without going to too much additional work. If someone asks a simple question as to how many orders we place in a month, we can give them this information in less than a minute, just by going to the numerical file."

Factory Order

THE accompanying Factory Order form used by the Houston Division of the Square D Company, was developed to replace a former method of making out the factory order from an "instruction" form written in the Order Department. District Manager Ray Walker states that its use has not only eliminated a certain number of errors that are likely to occur, but that it has speeded up the time in getting the orders into production and shipments made. The form is made in quadruplicate and distributed as follows:

1—Billing copy.
2—For Posting Stock records.
3—To factory for assembling order.
4—Customer's Acknowledgement copy.



The set of tickets is written when order is received. The first and second copies are retained in the office. The third goes to factory where order is filled and anything backordered is noted. This copy is then sent to the shipping department. It provides both back-order and inventory control and contains all needed information for quick and easy reference.

* * *

Product Shortage of Book and Fine Paper

Prediction of a probable shortage of book and fine paper during the fourth quarter of 1944 was made by War Production Board officials at a meeting of the Commercial Printing Advisory Committee, WPB announces.

Possible steps to meet this shortage were discussed by committee members who recommended two possible solutions as an alternative to a proposed 10 per cent reduction of existent quotas for all types of paper. These are:

(1) Utilization of approximately 18,000 tons of heavy paper now in storage.

(2) A reduction in inventories based upon the highest inventory during the preceding three or four quarters.

Committee members agreed that these measures would save enough paper to meet the expected shortage of light weight paper facing the commercial printing industry during the last quarter.

Though there is a large quantity of heavy weight paper in storage, printers have been preferring supplies of light weight paper, it was explained. Committee members urged that printers be en-

(*Continued on page 234*)

Prominent Users of Strathmore Letterhead Papers: No. 52 of a Series



does your letterhead represent your traditions?

From darkest Africa to the Far East . . . from the steppes of Russia to the Brazilian jungles . . . Mentholatum, the simple, effective, home remedy . . . has brought relief and comfort to millions. It's found in army post exchanges as well as every corner drugstore. Wherever Mentholatum is sold it is recognized as a superior medicinal product.

To represent its traditional insistence on quality, Mentholatum has long used Strathmore papers for its letterhead. For Strathmore, too, is recognized as a superior product everywhere. Your letterhead is your ambassador to your public. Now that lighter weight papers are a wartime necessity, quality becomes more important than ever. The Strathmore watermark is your assurance of that quality.

Strathmore Papers for Letterheads: Strathmore Parchment, Strathmore Script, Strathmore Bond, Thistlemark Bond, Alexandra Bond, Bay Path Bond and Alexandra Brilliant.

STRATHMORE *MAKERS OF FINE PAPERS*

Strathmore Paper Company, West Springfield, Massachusetts

PAPER IS PART OF

TODAY'S PICTURE

Current Strathmore advertising points out how essential paper is to the war effort, features leading industries that use Strathmore in their Victory programs, stresses the point that good letterheads help maintain the reputation every firm is guarding today.

★ ★ ★

This series appears in:

FORTUNE
TIME
BUSINESS WEEK
UNITED STATES NEWS
NEWSWEEK
FORBES
ADVERTISING & SELLING
TIDE
PRINTERS' INK
SALES MANAGEMENT



Are you being caught with shorts?

When you place an order for carbon paper, there's no need to be caught with "shorts".

Just specify Webster.

You won't get a short order if you do. You can have all the Webster carbon papers and typewriter ribbons that you need.

And we've licked slow transportation, too. Warehouses are located in key U. S. cities. 85% of the orders received are shipped within 24 hours.

So specify Webster's when you need quality carbons. Webster also makes carbon papers for gelatine hektograph and spirit process duplicating machines; carbon paper ribbons for photo-offset work; ribbons and carbons for all Elliott-Fisher, Addressing, Adding and International Business Machines. F. S. Webster Company, 13 Amherst Street, Cambridge 42, Massachusetts.

WEBSTER'S

Carbon Papers and Typewriter Ribbons

(*Continued from page 232*)

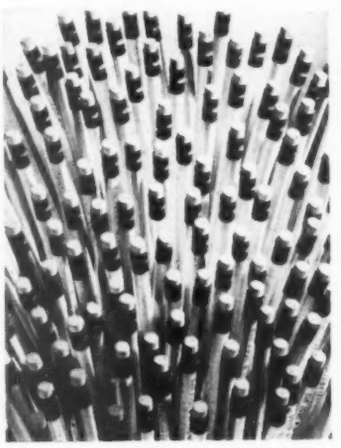
couraged to use large quantities of heavy paper instead of the light grade by using the lighter paper, printers have been able to increase the quantity of paper available under their tonnage quotas.

One method suggested was the creation of a "bonus" of heavy paper to the printer without affecting his tonnage quota. WPB was urged to advise paper users to cooperate in this problem by using more heavy paper and thereby lessen the shortage of light weight paper.

Committee members said that a reduction in inventories would be a more equitable solution than a straight quota reduction of 10 per cent for all grades of paper. WPB suggested that this reduction might be varied by a smaller cut to those plants who need a large inventory at the end of the year, and a larger cut for plants customarily carrying a small year-end inventory.

SEE PLASTIC FERRULE AS POSTWAR PENCIL TIP

Accompanying illustration shows pencils made by American Pencil Company equipped with Tenite ferrule. Because of the resiliency of the plastic the ferrule grips both pencil and eraser firmly without splitting or clipping. Tenite is available in unlimited colors with the result that the plastic tips are quite attractive. It is reported that the plastic ferrule is a definite postwar as well as current pencil tip.



Plastic Ferrule Tips

ALL PURPOSE OFFICE MACHINE TYPE CLEANER

To answer the needs for an all purpose cleaner for vital office machines—typewriter, adding, bookkeeping and billing machines—and other types of labor saving devices using a ribbon and type, Reliance Pencil Corporation, Mt. Vernon, N. Y., has placed upon the market an improved type of cleaning fluid, Durol Type Cleaner, that can be used for type bars, type keys, and platen rollers. This

(*Continued on page 236*)



NATIONAL LOOSE LEAF COVERS

The busy reservation clerks speed paper work with National Covers at A. A., La Guardia Field, New York.



NATIONAL
STEEL HINGE RING BOOKS
are again available.
Ask for series 4800.

help American Airlines, Inc. to "Keep 'em Flying". . . .

On the ground, as in the air, American Airlines, Inc. are generous users of NATIONAL LOOSE LEAF COVERS to keep records in order for quick index reference, constant change and ease in handling. Over the Route of the Flagships they know the value of LOOSE LEAF . . . and the quality and stamina of NATIONAL COVERS.

Just another way of saying . . . "buy NATIONAL". You can depend on all NATIONAL LOOSE LEAF COVERS for long life and permanent satisfaction. There's a size and style for every need.

AT YOUR STATIONER'S

NATIONAL

NATIONAL BLANK BOOK COMPANY
HOLYOKE, MASSACHUSETTS
NEW YORK CHICAGO BOSTON SAN FRANCISCO

FREE PLASTIC ENVELOPE

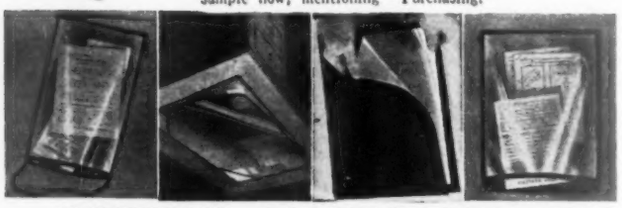
TO PURCHASING MEN



Unique Plastic Envelope Offers Plant Executives Low Cost To Cut Errors, Boost Output!

Send today for this 9" x 12" standard Kleer-Vu Plastic Envelope and show it to your production executives. They'll see its advantages at once. Keeps factory records, jobs cards, blueprints, etc., clean and neat, free of dirt. Eliminates doubts about written instructions. Helps avoid errors and make-overs on vital jobs and speeds up work. Excellent for keeping much-handled office forms bright and clean — saves recopying and re-typing time. Envelope cost is low—production savings high. Send for your free sample now, mentioning "Purchasing."

MANY STYLES TO CHOOSE FROM



There's a Kleer-Vu Plastic Envelope for every purpose. Special styles can be made to order at slight extra cost. Write for free sample, literature today.

AMERICAN PLASTIC PRODUCTS
2907 So. Main Street • Los Angeles 7, Calif.
New York Office: 190 Berry Street, Brooklyn 11, New York
Milwaukee Office: 221 N. Water St., Milwaukee, Wisconsin

***Kleer-Vu* PLASTIC ENVELOPES**
reduce errors... save labor... speed work



HIS FAVORITE PIN-UP

When this purchasing agent gets swamped with pesky clerical detail, just a glimpse of Hill's new coupon book for ordering business cards gives him courage to go on! For R. O. H. Hill has proved that handling orders for business cards *can* be easy, quick, exact, and economical.

All you do is buy a coupon book, or books—the price depends on the number of books and the type card desired. Then when someone needs business cards you tear out a coupon to cover the quantity . . . fill in the few instructions . . . mail to Hill—and presto! There's no proof to read, no delivery to handle (Hill delivers direct, anywhere in the U. S.)—one invoice to put through the books, one check to draw, and you're through with this detail.

Get in touch with R. O. H. Hill today and add a bright spot to *your* daily routine. We'll send full particulars by return mail.

270 Lafayette Street
New York 12, N. Y.
CAnal 6-6340

R.O.H. HILL, INC.

Engravers and Thermographers

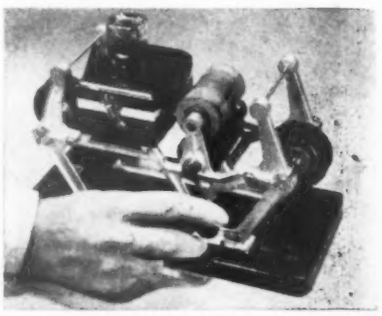
Business Cards — Letterheads — Announcements and other "Ambassadors to American Business"

(*Continued from page* 234)

product is said to remove accumulated grime, dust, dirt quickly and leaves these parts as immaculate as the day they rolled off the assembly line.

* * *

REJUVENATES OFFICE MACHINE RIBBONS



For the rehabilitation of office machine ribbons that are dried out rather than worn out, machine known as the Ribboninker has been introduced by the Display Equipment Company, Adrian, Mich. Operation of the unit is said to be simple which makes possible the use of ribbons until the fabric breaks.

The new model "Ribboninkers" apply a coating of ink on the ribbon as it is drawn through an ink saturated felt pad. This pad is kept saturated by the ink fountain mounted on the top. The ribbon then passes through pressure rollers and is rewound under tension on the empty spool. The ribbon can be used immediately after inking.

The new model "Ribboninkers" are just being placed on the market. The Model "C" will re-ink ribbons up to ¾" wide. The Model "D" will re-ink ribbons up to 2" wide. Each unit is sturdily built, having a two piece die cast frame with steel shafts and adjustable ribbon holders.

For office that use ribbons of more than one color, additional felt inking pads and ink in black, blue, purple, brown and red are available.

METAL FOR SWIVEL MECHANISMS OF WOOD OFFICE CHAIRS

As a result of appeals filed with the War Production Board, two manufacturers have been granted permission to use metal swivel mechanisms from their inventories in the manufacture of wood office chairs, WPB reports.

The appeals were filed under the metal furniture and fixtures order (L-13-a). This is the first time that permission to use metal swivel mechanisms has been granted by WPB.

The Manufacturers are: Davis Chair Co., Marysville, Ohio, and Gunlocke Chair Co., Wayland, N. Y.

L-13-a prohibits the use of metal swivel mechanisms. Manufacturers have been using wooden swivel mechanisms for about two years.

Only 675 swivel mechanisms are involved in the two appeals. They will al-

leviate only a small part of the need for metal swivel mechanisms, officials said. Pre-war use averaged about 700,000 per year.

Fewer than 20,000 metal swivel mechanisms are estimated by WPB as being frozen in other manufacturers' inventories.

ALUMINUM AVAILABLE FOR LOOSE LEAF BINDER PARTS

Aluminum is now available for the manufacture of metal loose-leaf binder parts and units, and mechanical bindings under an amendment to Limitation Order L-188, issued by the War Production Board.

Previously the only metals available for such users were iron, steel and zinc, but with the relaxation under Priorities Regulation 25 and Order M-1-k, aluminum may now be used, WPB Printing and Publishing Division officials said.

A unit is now defined as a complete device including mechanical bindings designed to hold together loose leaves, covers, paper products or other materials in a binder.

Fabricators or persons who wish to obtain materials to make this type of binder or parts may get them under Controlled Materials Plan Regulations or Priorities Regulations 13 and 25, it was pointed out.

PRICE DIFFERENTIALS FOR LIGHTER WEIGHT PAPERS

In line with a War Production Board order requiring paper manufacturers to shift the production of several grades of papers to lighter weights as a part of the fiber conservation program, the Office of Price Administration announced standard price differentials for the lighter weights of offset and papeterie papers.

Maximum 50 Lbs.

Production of offset is now limited under most circumstances to a maximum basis weight of 50 pounds. Much of this paper is used by the armed services for maps, forms and manuals of instruction. In shifting to the lighter weights, manufacturers incur an increased unit cost per pound by reason of a decreased production rate and OPA estimates that a price increase of 7½ per cent for the lighter weights of offset papers will give the industry the same return on these weights that obtained on normal weights prior to the War Production Board action.

OPA said that application of these lightweight differentials, taken in conjunction with the shift to lighter weights, would not result in increased overall cost to the ultimate consumer, because of the fact that in most cases an equivalent area of paper can be purchased at the same or less cost than heretofore.

Simultaneously OPA announced similar differentials for papeteries, used for making boxed stationery, greeting cards and announcements which must now be produced at a maximum weight of 20 pounds, a reduction from formerly estab-

(*Continued on page 238*)

YOU plan that Postwar Product...
Let DENNISON plan the Label



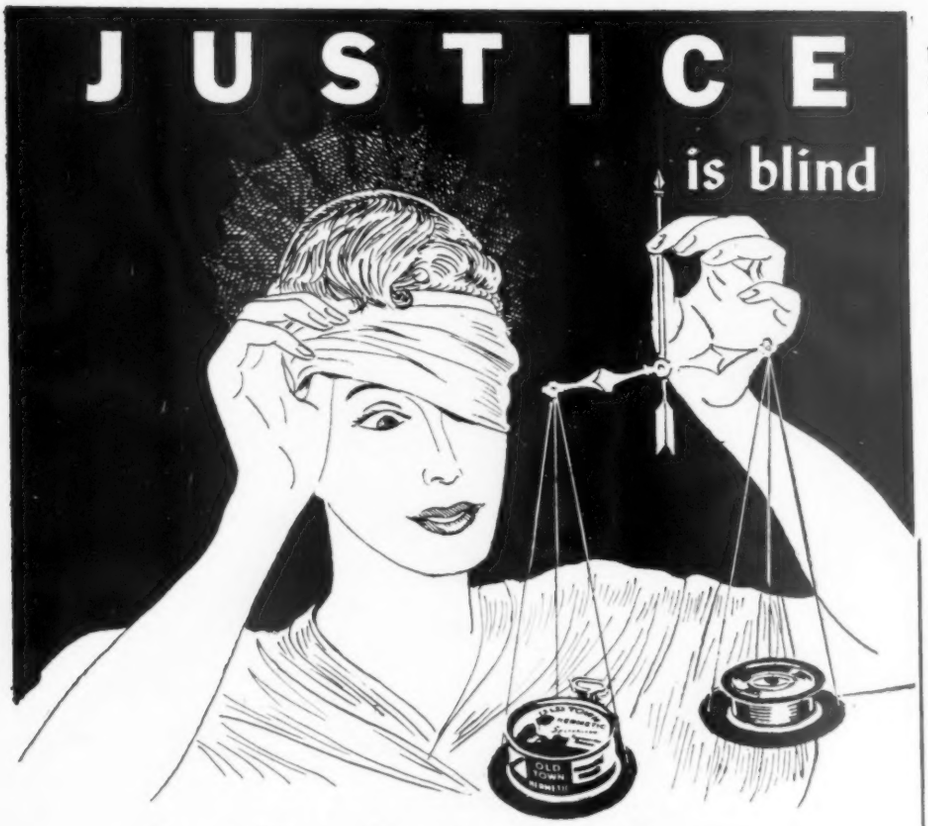
DON'T PUT IT OFF—PUT IT UP TO

Dennison

1844 ONE HUNDREDTH YEAR 1944

Dennison experience and facilities have been multiplied and broadened by hundreds of wartime problems. Let Dennison plan today the specialized or special purpose labels that can be manufactured tomorrow. Write Dennison, 79 Ford Ave., Framingham, Mass.

TAGS • LABELS • SEALS • SET-UP BOXES • MARKING SYSTEMS • PAPER SPECIALTIES



But She Peeks to Choose Her Ribbons and Carbons

Open your eyes to Old Town! Wise Old Lady Justice knows you can't shut your eyes, point and say "that one." A good look at the name on the box will guide your guessing finger to the best in ribbon and carbon performance. Carbon papers, ribbons and duplicating supplies need not be blind items!

When you say "Old Town," you know the hidden values will show up every time. It's these hidden values of craftmanship in Old Town ribbons and carbons which make you ask for Old Town again and again. Old Town manufactures the "open-eyed" line for all the different models of competing office and duplicating machines without any favoritism.



Trade-Marked and Grade-Marked for Your Protection

Old Town
RIBBON & CARBON CO. INC.
Foremost Makers of Ribbons and Carbons for Every Use
750 PACIFIC STREET, BROOKLYN 17, NEW YORK, N. Y.
Sales and Service Everywhere

(*Continued from page 237*)

lished weights. (War Production Board Order L-120 required the reductions on June 5, 1944.)

The action also sets differentials for secondary finishes which are in line with those customarily charged by the industry.

(Amendment 4 to Maximum Price Regulation No. 451—Book Papers—effective September 19, 1944 and Amendment 5 to Maximum Price Regulation No. 450—Writing Paper and Certain Other Fine Papers.

DENNISON ADVERTISEMENTS DIRECTED TO POSTWAR PLANNING

Because actual procedure in postwar planning is now receiving so much attention, the Dennison Manufacturing Co., Framingham, Mass., makers of tags, labels, seals, set-up boxes and various specialties, has inaugurated a series of advertisements offering the services of Dennison specialists in completing plans for postwar work still in the plan stage. The advertising messages cover basic Dennison specialties and each advertisement will high-spot the sort of work Dennison did in a given field prior to the war, and illustrates current war work.

NEW PAPERBOARD PRODUCT OUTRIVALS STEEL

Among the interesting, unique wartime developments achieved by American industry to meet the "critical materials" situation created by war conditions, is a wheel-like, laminated paper bomb band . . . a co-operative development of the Alton Box Board Company of Alton, Ill., and the Kenray Co., of Milwaukee, Wis.

All bombs, up to 1,000 lbs. in weight, are equipped with two of these heavy fibre bands which facilitate transportation and handling of bombs and protect the metal lugs on the bomb casing against damage. Every bomb is protected by these bands from the time it leaves the factory until it is placed in the bomb bay of the plane as it prepares to embark on its mission of destruction over enemy targets. The "paper" bands, among other things, permit bombs to be rolled over rough ground with a minimum of effort and danger, greatly facilitating handling as bombs are brought to ammunition dumps, carried to the airfield, and loaded into planes.

Previous to this development, bombs were equipped with steel bands to serve the same purpose. Each of these steel bands required 13 lbs. of critical material—which was reduced to 2 lbs. 10 oz. per band through the substitution of paperboard bands. In a drag test of 171 feet, a 1,000 lb. bomb equipped with steel bands showed worse damage than fibre bands on a bomb dragged 1,275 feet over the same course. Similarly, in drop tests, steel bands showed failure after 2 drops whereas the fibre bands were still in good condition after 6 drops.

This new "material," is lighter and more shock resistant than steel, it can be sawed, nailed or screwed into like wood, is absolutely waterproof and weatherproof

. . . and finally, can be produced in large volume at relatively low cost.

The Kenray Company, of Milwaukee, was organized primarily to formulate and produce the highly specialized industrial adhesive required for the Bomb Band project, supplied to the Alton Box Board Company and more recently to other producers of the same type of band to meet Government production requirements.

D. G. SHOOK, DEPUTY DIRECTOR, PRINTING & PUB. DIV. WPB

Appointment of Donald G. Shook, of Washington, D. C., as deputy director of the Printing and Publishing Division of the War Production Board was recently announced by Arthur R. Treanor, director of the division.

Mr. Shook has been attached to the Forest Products Bureau since August, 1943. For the last six months he served as special assistant to Harold Boeschenstein, acting director of the bureau, and prior to that as consultant in the Printing and Publishing Division. Besides serving as deputy director, he will be acting chief of the Magazine and Periodical Section of the division.

SPONSOR "PAPER HOLIDAYS" TO CONSERVE PAPER

"Paper holidays" are being declared in cities and towns throughout the country in an effort to stretch limited supplies of paper, the War Production Board announces. During the "paper holidays," retail merchants will use no bags or wrapping paper, except for articles that require wrapping for sanitary and protective purposes.

The WPB Conservation and Salvage Divisions, in cooperation with the Periodical Publishers National Committee, will sponsor the "paper holidays."

The first "paper holiday" was held in Peoria, Ill., early in July. Not only were large quantities of wrapping and packing materials saved during the holiday, but also paper salvage in Peoria increased 600 per cent as the public expanded its paper consciousness. So successful was the Peoria drive that from a short-term holiday it was extended as a continuing program, officials said.

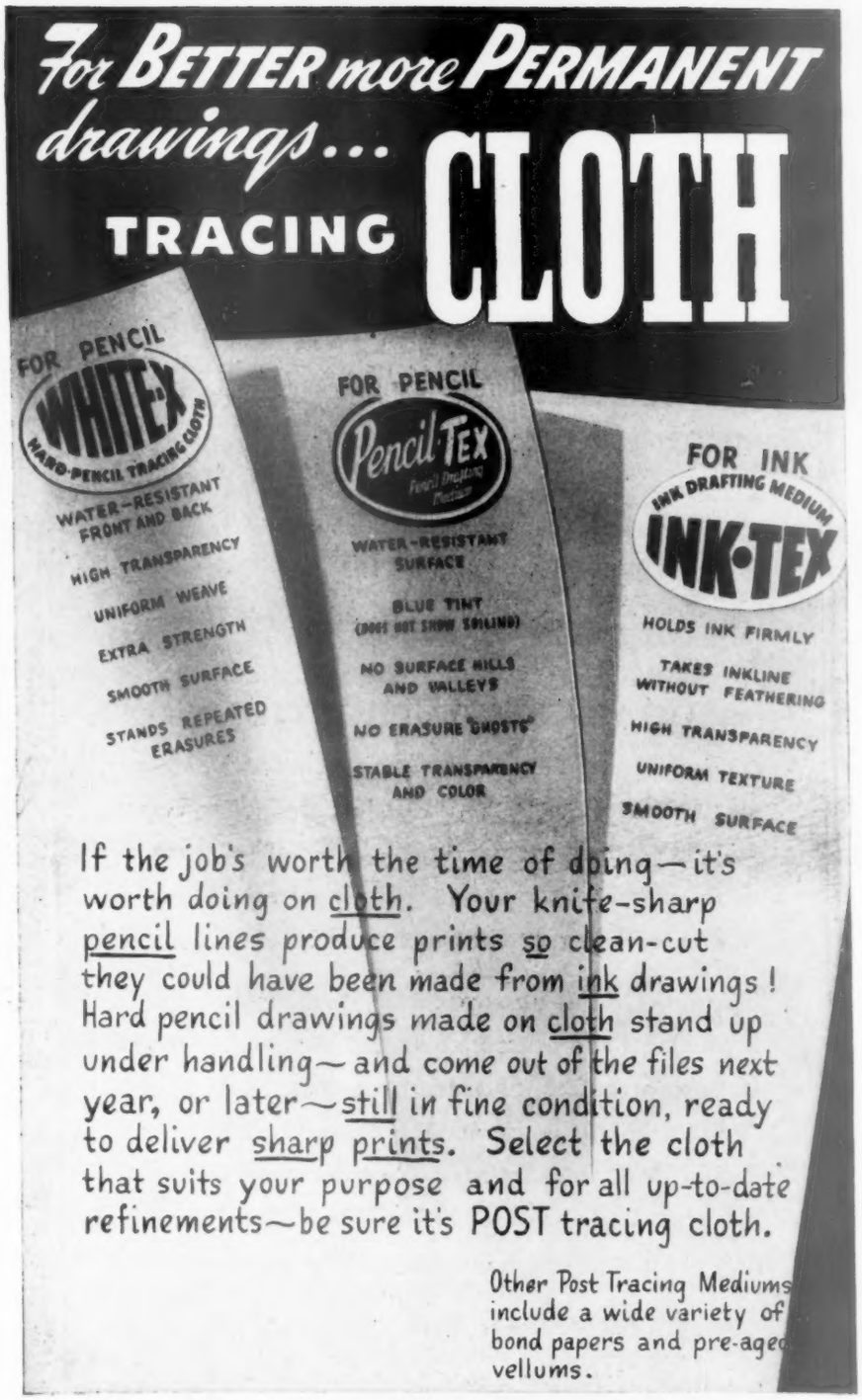
"Paper holidays" in other cities, based on the Peoria plan, may be declared for one week, one month, or for the duration. Even one day's curtailment in the use of paper will help, WPB officials said.

Howard Coonley, Director of the WPB Conservation Division, stressed the need for stringent economies to conserve the nation's waning paper stockpiles. He said:

"Unlike many other wartime shortages, the paper problem shows no evidence of immediate solution even when the war in Europe ends. Enormous quantities of food, equipment and medical supplies will still be needed overseas for our servicemen and for relief to distressed nations. All of these shipments require paper or paperboard for packaging."

Because some dealers still have stocks

(*Continued on page* 240)



Main Office: THE FREDERICK POST CO., Chicago, Ill.

KANSAS CITY

POST WESTERN BLUE PRINT COMPANY

909 GRAND AVE. VICTOR 7881

EAGLE-A
PAPERS

TOP QUALITY IS NOT EXPENSIVE
The difference in paper cost between using the very best all-rag paper for letterheads such as Eagle-A Coupon Bond and the very cheapest wood pulp paper is less than one-half-a-cent per letter.



QUALITY SPECIFICATIONS

The official letter paper specifications for the President of the United States call for 100% rag content paper —WHY?—Because the dignity of his office, as well as the permanent importance of his correspondence, make the highest quality paper an imperative choice.

Thoughtful business executives, bankers, lawyers, accountants and other professional men realize that important correspondence or documents demand "good form". It is not enough, however, that paper should "look the part". Letters or documents which may have *legal value* years hence, should be entrusted only to the strongest, most permanent paper—such as

EAGLE-A COUPON BOND

It is the paper to use for prestige-building stationery and documents that require outstanding strength and permanency.

EAGLE-A PAPERS
AMERICAN WRITING PAPER CORPORATION
HOLYOKE MASSACHUSETTS

BUY WAR BONDS—*SAVE WASTE PAPER*—DONATE YOUR BLOOD

(*Continued from page 239*)

of packaging materials on hand, the public has not yet felt the pinch of shortages, officials said. With the ever-increasing paper needs for the armed services and essential home products, still further cuts must be anticipated in the near future, they added.

* * *

BOOKLET ON INDUSTRIAL PAPERS

Interesting booklet on Industrial Papers published by the Central Paper Co., Muskegon, Mich., among other things contains "Quick Index" to wide assortment of papers, ranging from "absorbent" to "tire wrap," which briefly recites the character or treatment of the papers and the uses to which they are put. Sixty-eight types of paper are listed alphabetically.

* * *

LIMITATION ORDER ON STAPLES AND STAPLERS REVOKED

Limitation Order L-329, governing the production of hand-operated industrial and office staplers and staples, has been revoked, but the use of material to make these items will continue to be controlled through allotments to manufacturers under the Controlled Materials Plan, the War Production Board announces.

Since hand-operated staplers and staples are already being made at the capacity of the industry, revocation of the order will not result in increased production, WPB officials said.

As before, each manufacturer will apply to WPB for materials on Form CMP-4-b. WPB will continue to make enough material available to permit production at the capacity of the industry.

Staplers and staples are important war production items. They are used for the manufacture of planes in airplane factories, for the manufacture of camouflage materials in ordnance plants, for packaging in food industries, in container production, and in the construction of buildings and ships.

* * *

NEW APPOINTMENTS IN WPB PAPER DIVISION

Two new appointments and two resignations in the Paper Division of the War Production Board were announced recently.

Walter H. Wilcox was named Director of the Paper Division, effective September 16, 1944, by Harold Boeschenstein, Acting Director of the Forest Products Bureau. Mr. Wilcox succeeds Rex W. Hovey, who is returning to his company, the Oxford Paper Company of New York. Mr. Hovey will continue his association with the Paper Division as a Special Consultant.

Mr. Wilcox has been with WPB since August 14, 1944, serving as Deputy Director in charge of the Fine Paper Branch. He has an extensive experience

in the paper industry, having been associated since 1930 with the S. D. Warren Company of Boston. He is now on leave of absence as assistant to the president of that company.

James L. Madden, who has been in charge of the Pulpwood Branch of the Paper Division since November, 1943, is returning to his company, the Hollingsworth & Whitney Company of Boston, Mass. Mr. Madden has consented to serve as consultant of the Pulpwood Branch.

Mr. Madden's position will be taken by Curtis Hutchins, who has had several years' experience in the pulpwood field. For the last several months he has been in charge of pulpwood production in the northeast section of the United States. Mr. Hutchins comes from the Dead River Company, Bangor, Maine, and is now on leave from that company.

WELLS OFFICE FURNITURE CO. IN NEW BUILDING

The Wells Office Furniture Co., Chicago, recently moved into its new five-story home at 725-33 South La Salle St., which has been named the Wells Office Furniture Building. General offices of the company, display room, and some of the company's production facilities are located in the building.

REVOLUTIONARY CHANGES AHEAD IN TEXTILES

In a paper before the American Chemical Society's annual meeting here today, Dr. Donald H. Powers, head of Monsanto Chemical Company's textile research program, reported successful efforts to produce stockings thant won't run, pants that won't shine, suits that won't wrinkle, even when wet, and woolens that won't shrink and will wear three times as long, and all this without changing the feel and texture of the cloth. Many of the developments have important industrial applications, he said.

"In the case of cotton fibers," he said, "we have found it possible to add as much as 5 per cent to tensile strength by coating them with newly-developed Syton solution which also prevents stockings from running.

Lower Costs

With Syton-treated yarns, he said, looms will operate with greater efficiency because breaks will be fewer, while in the manufacture of cotton twine and cotton rope, fewer twists will be needed and stronger cords produced. This in turn will reduce operating and material costs, improving cotton's competitive position against foreign-produced hemp.

In his technical explanation of the new processes, Dr. Powers pointed out that the new treatment on woolens involves the carrying out of a finished chemical produce inside the hollow microscopic tubes of each individual fiber. In other words, the fiber's veins and arteries become the final reaction kettles, as well

(*Continued on page 242*)



"Homework"

When you want to know

GO TO AN EXPERT

IF YOUR PROBLEM is selecting the right paper for the job, who could advise you better than your printer?

Knowing paper quality is his business . . . on it depends much of his own reputation for fine printing. That's why in this series of advertisements we have been urging you to take his word on Rising quality rather than our own. For years printing experts have chosen Rising Papers for every printing purpose.

Prices on a par with other quality papers. Among other lines: Rising Bond (25% rag), Rising Line Marque (25% rag), Finance Bond (50% rag), Rising Parchment (100% rag). The Rising Paper Co., Housatonic, Mass.

Rising Papers

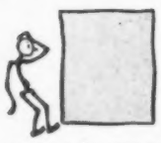
Rising

ASK YOUR PRINTER—HE KNOWS PAPER

WARTIME LETTERHEAD PRIMER!

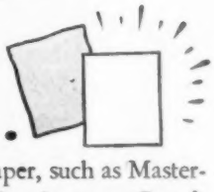


Today



. . . many non-rag and part-rag papers tend to be somewhat dull and grayish — the unavoidable result of wartime shortages of bleaching chemicals.

But . . .



ALL-RAG paper, such as Masterline all-rag Anniversary Bond, remains just as white, clean, crisp, permanent and impressive as ever! . . . a sure cure for wartime "letterhead-aches"!

Only 1/5 cent more per letter

All-rag Anniversary Bond costs only 1/5¢ more per letter than 25% rag-content stock. That's not even cigarette money! . . . Only 6¢ a day if you use 10,000 letterheads a year.



FREE Comparison Kit

Compare *all-rag Anniversary Bond* and part-rag paper side by side. Write today . . . on your business letterhead . . . for unique, FREE "See for Yourself" Kit.*

Includes printed, lithographed and engraved samples of Anniversary Bond . . . plus extra sheets for you to test in your own way. Write to:

FOX RIVER PAPER CORPORATION, 403-J S. Appleton St. Appleton, Wisconsin.

All-Rag ... ONLY 1/5 Cent MORE PER LETTER

ANNIVERSARY BOND

A FOX RIVER Masterline PAPER

(*Continued from page* 241)

as the compound's ultimate repositories.

Formaldehyde, age-old preservative, is combined with one of the members of the melamine family to produce the compound which shrinkproofs fabrics and makes them crease-resistant, he said.

TUBULAR FURNITURE PRODUCTION DOUBTFUL

Members of the newly formed Chromium Plated Tubular Furniture Industry Advisory Committee at their first meeting in Washington said that many of the former manufacturers of chromium plated tubular furniture are engaged 100 per cent in war production and would be unable to resume large-scale manufacture of their normal products in the immediate future, the War Production Board reports.

In addition to making tubular parts for tanks, planes, and other types of military equipment, the industry is stamping and plating accessories for war goods, IAC members reported.

Shortage of labor and materials was stressed by WPB representatives as being further deterring factors in the resumption of civilian production. Most of the plants are situated in critical labor areas. The supply of steel, copper, chromium, nickel, plastics, and shipping containers is insufficient to permit the use of these materials in the production of tubular furniture at the present time, WPB representatives said.

Industry members urged WPB to keep the committee informed of future developments in the materials supply and to permit their use in the production of chromium plated tubular furniture as soon as this can be done without interfering with war production.

Committee Members

Members of the Chromium Plated Tubular Furniture Industry Advisory Committee are: Burl Buckner, Noblitt-Sparks Industries, Inc., Columbus, Ind.; M. L. Brown, Daystrom Corp., Olean, N. Y.; Philip E. Ericson, Howell Co., St. Charles, Ill.; Edwin J. Perry, Lloyd Mfg. Co., Menominee, Mich.; Homer A. Simpson, American Fixture & Mfg. Co., St. Louis; Edward Fox, Empire Table Co., Inc., Chicago.

ARMY PENCILS PURCHASED BY THE MILLION

Ranging from the familiar lead pencils to special types which can be used to write on glass or metal, pencil purchases at the Jersey City Quartermaster Depot reached a total of almost 17,000,000 for the first quarter of 1944. The bulk of the purchases, made at the depot for the entire Army, comprises general writing pencils in varying degrees of hardness and colored pencils in blue, red, green and the blue-red combinations.

One of the most interesting pencils purchased at the depot is that used extensively by the Ordnance Dept. in red, blue, green or yellow. Made of a wax

compound, the paper-wrapped marking pencil can be used on china, metal, glass or any other glazed surface. Embodying a complex formula, the pencil is produced by only a few contractors.

36 Different Colors

Supplying special types of pencils for services like the Air Corps which requires wide varieties of colored pencils for map making, the Engineer Corps which uses sets of 36 different colors, and the Medical Corps which uses chemically-pure laboratory pencils for skin markings. The laboratory pencils must be non-injurious, containing no ingredients which would cause infection. Another special type is the electrographic pencil used in electrical accounting machines by many of the services but particularly by the Signal Corps for test scoring. The lead in this pencil must be sensitive to electric impulses, and forms an integral part of the ingenious machines which save untold quantities of man hours.

Lithographic, indelible and hectographic pencils are bought in large quantities, as well as drawing pencils for engineers, draftsmen, and architects. According to buyers at the depot, manufacturing output has been limited by wartime scarcities of raw material, but due to the excellent cooperation of the members of the industry, adequate supplies have been obtained.

* * *

URGE FURTHER CURTAILMENTS IN PAPER CONSUMPTION

Further curtailments in paper consumption, especially printing paper, under limitation orders of the War Production Board, were recommended by the Over-All Paper Industry Advisory Committee at its recent meeting, according to Rex W. Hovey, Director of WPB's Paper Division.

In view of the current pulp and paper shortages, the tremendous demands due to war and essential requirements and the lack of skilled labor, a special committee urged WPB to revise its limitation orders as they affect the consuming industries so that the aggregate right to buy and use paper will substantially balance the ability of the mills to produce it.

Other recommendations included suggestions to increase the production of paper, wherever practical, by permitting integrated mills with adequate wood supplies to increase their pulp production and to use it in making more paper.

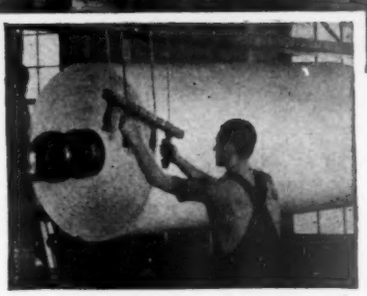
WPB officials announced that studies were being made along these lines, and that as soon as the necessary data can be collected, a decision will be announced. It was pointed out, however, that all such production, if it materializes, will be subject to direction by the Paper Division under order M-241.

In the fourth quarter, great quantities of pulp will go into the manufacture of fibre containers, waterproof papers, multiwall bags and special papers, and for military nitration pulp. This means that civilian paper supplies will have to be

(*Continued on page* 244)

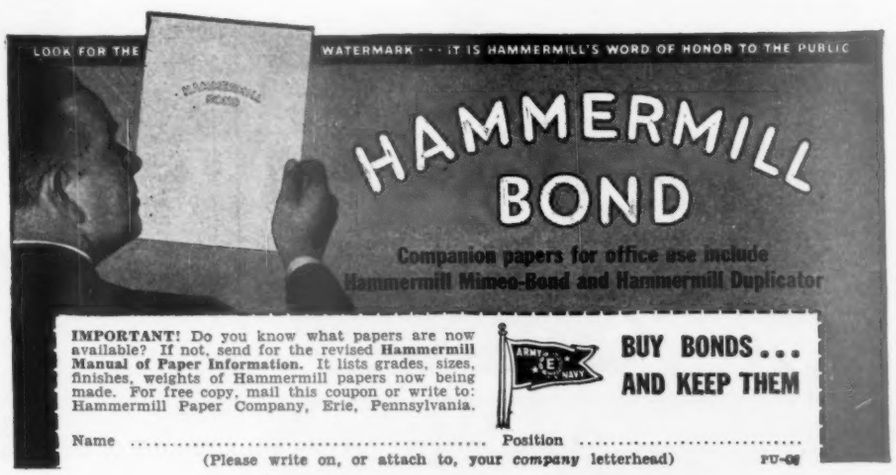


ABOVE is one of the huge digesters at Hammermill where carefully selected spruce chips are transformed into pulp. Every factor in the "cooking" process is controlled, minute by minute, by the most precise automatic devices in papermaking.



Every manufacturing step that turns the pulp into Hammermill Bond is checked with equal exactness. Every run of finished paper is given 18 additional tests in specially equipped control laboratories.

These are some of the reasons why Hammermill Bond is a uniform paper—why it uniformly takes typing and pen-writing more clearly, erases more neatly, has the appearance and feel of quality as your representative wherever you send it.



cut back, Mr. Hovey explained.

Efforts to continue the supply of pulpwood and the collection of waste papers will be vigorously pressed to achieve the greatest possible production of papers, WPB officials said.

Mr. Hovey declared that if mills undertake to fill civilian orders at the expense of cutting military production, the Army will insist on priorities or directives. He added that the Army doesn't desire such a step unless it would be the only way to secure essential military requirements on time.

Mr. Hovey revealed that production of groundwood, book and fine papers, used largely by the printing and publishing industry, in the second quarter of 1944 declined 11 per cent below the average quarterly production in 1942.

The present critical paper situation is being studied by all divisions of the WPB Forest Products Bureau and remedial actions are being drafted.

ANNOUNCE NEW CARBON PAPER

The Manifold Supplies Company, Brooklyn, New York, has announced its new carbon paper, Meridian Evr-Flat, which was developed by Manifold to meet demand for a longer wearing, more easily handled carbon, that will stay flat under all weather conditions. The sheet is said to improve the quality of copies, and results in faster work.

NEW REGIONAL SET-UP FOR VICTOR

Victor Adding Machine Company has recently announced a new regional set-up for its field organization: **L. P. Naylor** has been named Eastern regional manager with offices in New York. **F. S. Himebauch,** manager of the Chicago office will serve as Middle Western regional manager. **Kurt Vasen,** former director of the dealer division, is Western regional manager, Los Angeles. The newly created position of assistant general sales manager will be filled by **Alvin F. Bakewell.**

FOOD REAILERS IN PAPER CONSERVATION PROGRAM

The Conservation Division of the War Production Board announced the opening of a campaign today to obtain the cooperation of 300,000 chain and independent food retailers in the conservation of paper.

To aid in the conservation effort already in force and to make the present supply of paper last as long as possible, WPB officials said, the 300,000 retailers throughout the country are expected to sign and display the following pledge to conserve paper:

Because of vital war needs for paper we pledge cooperation with the War Production Board's Retail Paper Policy.

WE PLEDGE

To urge customers to bring shopping and paper bags to carry their purchases.

To place purchases in customer's own shopping bag or container whenever possible.

Not to wrap or bag packaged articles which can be safely carried unwrapped.

To use the smallest bag possible, and to make every bag carry a full load.

WPB—OPA DIGEST

Office Staplers—WPB—Limitation Order L-329, governing production of staplers and staples has been revoked, but use of material to make them will still be controlled through allotments under CMP.

Reduce Paper Use—WPB—An appeal to 25,000 leading business firms of nation to reduce their paper consumption to minimum was made by Donald M. Nelson.

Chrome Furniture War Orders—WPB—Members of Chrome Tubular Furniture IAC at first meeting said that many manufacturers are engaged 100 per cent in war production and would be unable to resume normal production in immediate future.

Fine Paper Shortage—WPB—Prediction of a probable shortage of book and fine paper during the fourth quarter of 1944 was made by officials at a meeting of Commercial Printing IAC.



FINE DIAMONDS

Since 1912 we have been direct importers of fine diamonds. Our values are outstanding. Selections sent for inspection without obligation.



L. & C. MAYERS CO.

ESTABLISHED 1912

Importers of Fine Diamonds

545 FIFTH AVENUE

NEW YORK



"We see by TOMORROW'S PAPER..."

After the war, printers and buyers of printing will benefit from improved paper standards. Like every other paper maker, International Paper Company has been forced, through war scarcities and restrictions, to produce sub-level paper. But out of the trials and tests have come many interesting and fruitful results. All this experience will be at your service at the end of the war. Then International will produce even better paper than ever.

BUY BONDS... SAVE WASTE PAPER

International

PAPER COMPANY

220 E. 42nd ST., NEW YORK 17, N.Y.

PAPERS FOR PRINTING AND CONVERTING

PERSONALITIES in the NEWS

George Bockius, Director of Purchases, Diebold, Inc., Canton, Ohio, has been named executive vice president, thus assuming a larger part in the direction of current operations of the company, and allowing President Adolph J. Roos to devote his attention to postwar planning and new products. Mr. Bockius is the third generation of his family to hold a position of responsibility with the company. His grandfather was one of the reorganizers in 1876 and his father was also an executive. He became associated with the company in 1922 after graduating from mechanical engineering at Cornell University and worked through many departments including the engineering offices, time study and methods and the purchasing department where he served for some time as Purchasing Agent.

Elmer Knapp is Purchasing Agent for the General Railway Signal Company, Rochester, N. Y. Also, he is a former president of the Purchasing Agents Association of Rochester; now he is Sultan Knapp. In a big plant like the West Avenue, Rochester Division of the General Railway Signal Co., weddings of employees are not an uncommon thing, and are generally recognized and celebrated by the department personnel in varying forms and elaboration. However, when three weddings in one department occur within a month as happened in the Purchasing Department, it seemed an appropriate occasion for really "going to town." Elmer Knapp thought it was even worth while going out of town for.

He arranged for the whole department to have a farewell party for the three prospective brides at the Brooklea Country Club which is but a short drive from the plant. So, a short time ago at the end of the day's work the Purchasing Department piled into cars and on their arrival at Brooklea were greeted by members of the Advertising Department with photographic equipment. Inspired by the dulcet tones of a ukulele (or was it) extracted by one of the musical brides, the camera folks evolved the accompanying harem scene, with Bahadur Knapp as sultan, content with his chibouque sultanas, and tarboosh.



Bahadur Knapp, Brooklea Harem, Rochester, N. Y., with insigne of his high office on his tarboosh. Serenely ensconced on the royal divan and surrounded by the lovely sultanas, his chibouque dissipates thoughts of such crass things as PR, CMP, LO, WPB, OPA, contract terminations, etc.

William A. Ziebell, Director of Purchasing for Cook Electric Co., Chicago, Ill., has been appointed manager of the MetalFusion Corporation, which has become a subsidiary of the Cook Company. The MetalFusion company has facilities for every known method of metal joining including critically controlled atmosphere brazing, heat treating and annealing, atomic hydrogen, shielded arc, seam and spot welding, gas flux brazing, salt bath brazing, and induction brazing. It also has a fully equipped metallurgical laboratory for testing and analyzing metals.

Lawrence Fagan, Purchasing Agent, Connecticut State Department of Health, Hartford, Conn., and president of the Connecticut Purchasing Agents Association, was a speaker on the "Connecticut Forum of the Air", broadcast by Station WTHT, Hartford, Conn., on the subject "What To Do With Surplus War Materials in Connecticut".

Charles T. Craig, Director of Purchases, The Weatherhead Co., Cleveland, Ohio, heads new sales office of the company

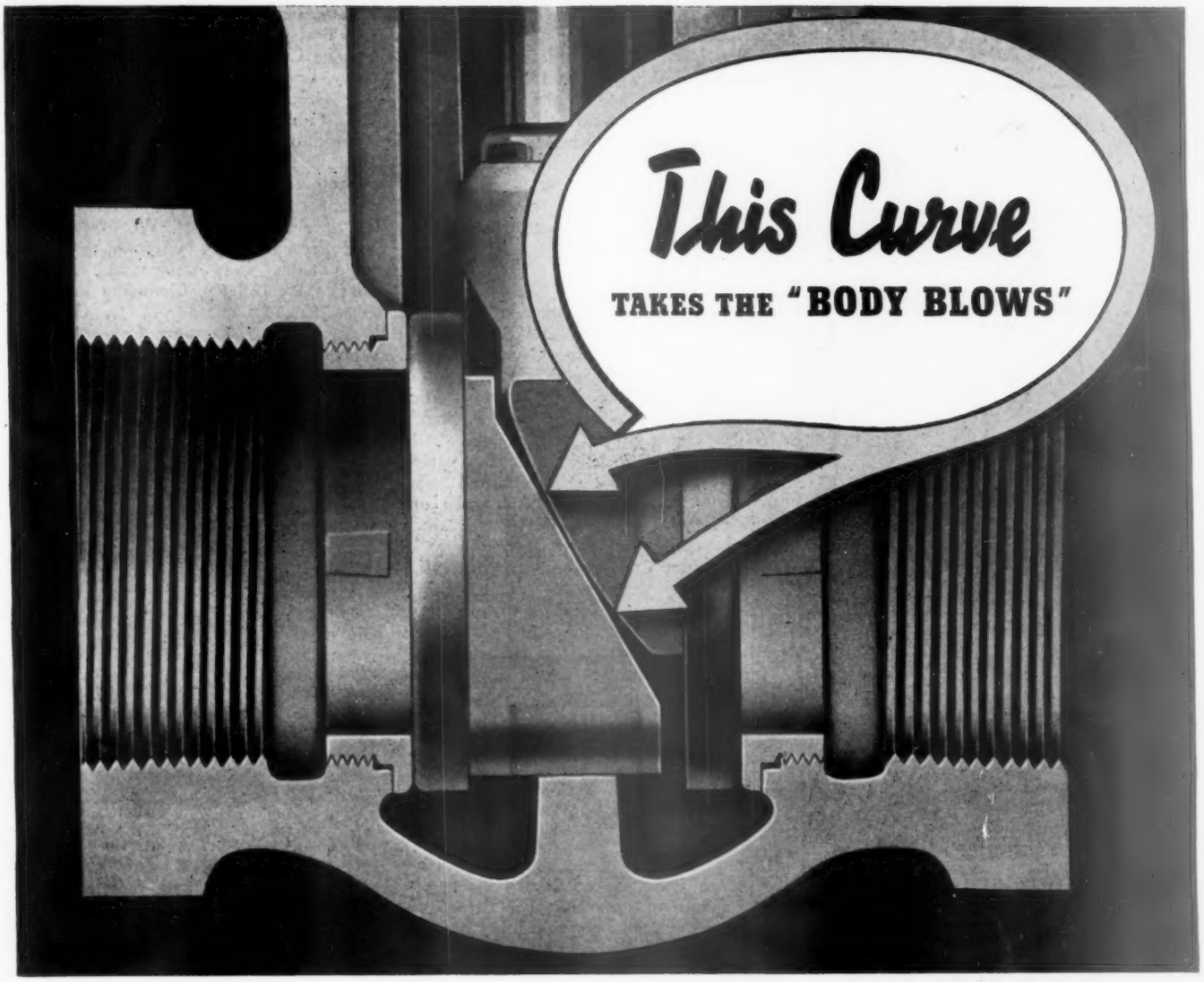


located in the Pure Oil Building, Chicago, Ill. He has been with Weatherhead for the past 13 years, prior to which he was connected with the Otis Steel Co., and the Hutchinson management of the Pioneer Steamship Company. He is a member of the Cleveland Purchasing Agents Association, and the Society of Automotive Engineers.

K. J. Keating has become production manager for Forman Ford & Co., an old established paint company of Minneapolis, Minn. He formerly was Purchasing Agent for the General Paint Corp., Tulsa, Okla.

Guy L. Marsters, vice president of the Norwich Pharmacal Co., and former Purchasing Agent, who also is vice chairman in charge of promotion of the Drug Chemical & Allied Trades Section of the New York Board of Trade, reports that the membership has reached an all-time high of 500 outstanding firms in the drug, chemical and allied industries. Sixty companies became affiliated with the organization in the past three months. Mr. Marsters states that the Section holds the unique position of representing every phase of the industry including light and heavy chemicals, crude drugs, pharmaceuticals, cosmetics, containers and closures, sundries manufacturers, wholesale and retail druggists, importers, exporters, publications and advertising agencies. Commenting upon the activities of the Section to raise the standards of the industries it represents to the highest plane of efficiency, Mr. Marsters declared that "the men at the helm of the organization

(*Continued on page* 248)



LINE strains, high temperatures and pressures will distort the body of any valve. Only Darling fully revolving double disc parallel seat gate valves have the curved wedge face and transverse bevels that permit the gate to adapt itself to out-of-line positions the valve seats may assume. There's no need to jam or force it; it fits naturally, easily and tightly.

The valve assembly consists of four simple parts—two discs, two wedges. These can easily be removed for inspection or maintenance without taking the valve from the line. When the valve closes, the two wedges force the discs firmly against the valve seats. On opening, the first quarter-turn instantly releases the wedges and frees the discs to be raised with less seating wear.

The discs are fully revolving through 360° and seat themselves in a different position each time the valve is closed. Thus wear on disc and seat is uniform, and life-long, tight closing results.

For drop-tight closing, year after year, for long, economical, trouble-free service, specify Darling Valve.



TRADE DARLING MARK

DARLING VALVE & MANUFACTURING CO.
WILLIAMSPORT, PA.

PORTRAIT OF A



who is assured of maximum efficiency on every design because he specifies

SCREW MACHINE PRODUCTS

made FASTER and BETTER for LESS *by*

U•S•AUTOMATIC

CORPORATION

Screw Machine Products

AMHERST • OHIO

Chicago Detroit New York

(*Continued from page* 246)

have always reflected the wisest leadership in the industry." It collaborated in the revising of the Food and Drug Acts of 1906 and 1938, and in the enactment of the Harrison Anti-Narcotic Act. Schedules of tares and tolerances compiled by the Section have been adopted as official throughout the markets of the world. It also set up arbitration machinery for settling commercial disputes within the industry.

Julian C. Davies, chairman of the publicity committee of the N.A.P.A. Purchasing Agent and Treasurer, N. Slater Co., Ltd., Hamilton, Ont., addressed the Sales Executives Club of Montreal on "The P. A. Looks at Advertising and Selling." In the course of his talk he said "All of us try to visualize what the early postwar years will mean to us and how new conditions will affect our jobs of selling and buying. We purchasing agents will be faced with a wide variety of new materials, appliances and methods. Much of the information we must have will come from our reading of advertising matter. We are going to look to the salesmen for the detailed information. The salesman who is most completely informed as to the details of the goods he handles and can capably impart his knowledge to us, will have a real advantage over his competitors not so fortified."

Ray Schmitt, Purchasing Agent for Armour & Co. at Pittsburgh, who is much concerned anent the truck tire shortage, has found that one of the best ways to trim down mileage is by re-routing trucks with the fewest traffic lights, and working closely with the drivers, according to the *National Provisioner.* His men keep their ears open for rumors about impending detours which they pass along to Mr. Schmitt who checks with the city officials or the state police, and upon confirmation works out new routes to avoid torn up roads or length detours. Armour's Pittsburgh unit, which employs 70 drivers and helpers to operate its 39 trucks, has spent more time surveying delivery operations in the last two years than in any of the previous 15, according to Mr. Schmitt, who adds that he takes into consideration three main points when determining routes (1) number of stops; (2) amount of tonnage; and (3) number of miles. He reports that frequency of deliveries has been reduced in some instances as much as 50%, and mileage per trip with larger trucks lowered 33%.

Frank A. Watts, General Purchasing Agent, Humble Oil & Refining Co., Houston, Tex., is general chairman of the Texas Committee for Post War Development organized by presidents of the Texas Associations acting in conjunction with the program of cooperation worked out by the National Association of Purchasing Agents and the Committee for Economic Developments. Other members of the Committee are: C. S. Youngblood, Gulf Production Co., and R. W. Siepel, Texas Electric Service Co., Fort Worth; Ben R. Newberry, Lone Star Gas Co. and Eric Jonsson, Geophysical Service, Inc., Dallas; T. G. Cabbell, Amarillo, Texas Panhandle Association; and Earl Cobden, Hughes Tool Co., Houston. The following are serving the committee in an advisory capacity: Carl Wuerpel, Community Public Service Co., Fort Worth, District Vice President, N.A.P.A.; and the presidents of the Texas Associations, namely: Charles W. Dabney, Champion Paper & Fibre Co., Pasadena; T. G. Cabbell; Walter Bell, Tarrant County, Fort Worth; and, George Brewer, Southwestern Drug Co., Dallas.

Colonel Wayne R. Allen, former Purchasing Agent for Los Angeles, California County, has received the Legion of Merit Award for establishing and carrying out a plan for rapid manufacture of gasoline cans in the United States. He was also cited for other meritorious services from July 1, 1942, to January 1, 1943, while serving as Chief of Procurement Office of the Quartermaster, Chief, ETO.



W. H. Driscoll, vice president, Carrier Corporation, Syracuse, N. Y., in charge of procurement, in a letter to Secretary F. J. Quenn of the Syracuse & Central New York Association, tendering his resignation as a member incident to "change in title, duties and responsibilities," says among other things: "Purchasing has long since graduated from the horse trading era. In the modern industrial world it is an art—a profession if you please, that requires special talents and sound apprenticeship—and it should command good pay. The very success of many plants has its source in the Purchasing Department."

Robert C. Kelley, Director of Purchases, Food Machinery Corporation, Los Angeles, Calif., has been appointed Purchasing Director for the Dresser Industries, Bradford, Pa. He has changed his association membership from the Los Angeles Association to the Purchasing Agents Association of Northwestern Pennsylvania.

Lt. Charles A. P. McAree, U. S. Navy, former municipal Purchasing Agent, Haverhill, Mass., who is now stationed at Bainbridge, Md., has the distinction of

(*Continued on page* 252)

GOOD *cast iron brazing begins with a* GOOD *tinning job*

Use the New AIRCO HI-BOND FLUX

(FORMULA NO. 35)



● Because of their graphitic nature, the surfaces of many types of cast iron do not tin satisfactorily when a conventional type of flux is used. Airco's HI-BOND Flux has been especially developed to overcome this condition. It is not intended for use in the actual brazing operation but rather for application before brazing to overcome tinning troubles. This flux is particularly effective on cast irons having a high carbon and silicon content or low combined carbon.

Airco HI-BOND Flux is packaged in powder form in 1-lb. glass containers. It is easy to apply—merely mix it with water to form a paste and brush on the cast iron surface to be brazed—or sprinkle the powder itself on the surface which has already been heated to the required temperature. Continue the brazing operation with a conventional brazing flux such as Airco MARVEL or HI-TEST and observe how well the molten bronze adheres to the surface.

Air Reduction specializes in the development of fluxes for welding and brazing; a partial description of some of these will be found at the right. Further details on these and other Airco fluxes will be furnished by any Airco office. Call or write today.



A FEW OF AIRCO'S QUALITY FLUXES

Airco Marvel Flux: Unexcelled for brazing cast iron, malleable iron and steel, and for welding brass and bronze, 1-lb. and 5-lb. containers.

Airco Hi-Test Brazing Flux: A new improved liquid-paste flux which increases density, hardness, quality of deposit and other physical properties. Minimizes undesirable fumes. Packed in 2-lb. jars.

Airco Napolitan Sheet Aluminum Flux: Most satisfactory and economical for welding sheet and cast aluminum. Packed in ¼-lb. and 1-lb. containers.

For facts on these and other Airco Fluxes, write for a copy of Catalog 22-C.

★ BUY UNITED STATES WAR BONDS ★

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AIR REDUCTION

General Offices: 60 EAST 42nd STREET, NEW YORK 17, N. Y.

In Texas: MAGNOLIA AIRCO GAS PRODUCTS CO. • General Offices: HOUSTON 1, TEXAS

Offices in all Principal Cities

FASTER DRILLING and CHIPPING

WITH THE POWERFUL *Thor* ELECTRIC HAMMER

SAVES TIME AND COSTS ON ALL INSTALLATIONS!

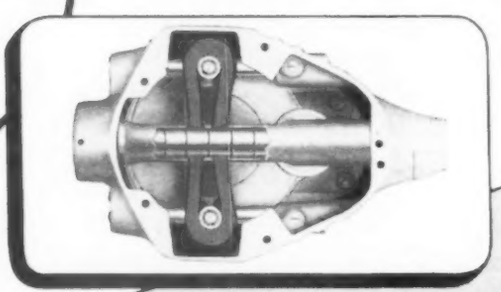
- **POWER**
- **PORTABILITY**
- **BALANCED WEIGHT**

COMBINED FOR FASTER WORK!



From light duty drilling of conduit holes in plaster to heavy duty drilling of anchor bolt holes in brick or concrete for sign hanging . . . for chipping ceiling grooves in stone or plaster . . . *for every electrical installation job,* the Thor Electric Hammer provides the power and handling ease that will save you time and operating costs!

The Thor Hammer combines the *power* of an exclusive "sling shot drive" with the *handling ease* features of balanced light weight and portability to make *quick work* of scores of different jobs in stone, wood or metal.



"SLING-SHOT DRIVE" PACKS MORE POWER INTO EVERY BLOW!

The Thor Hammer's radically different "Sling-Shot Drive" is a shock-proof rubber connection that drives the piston in powerful hammer action. It whips the piston back and forth 1,600 times per minute, acting as both power accumulator and shock absorber. The blow of the piston is not felt by the operator, nor is it transmitted to the gears or motor.

PLUS — ALL THESE ADVANTAGES!

HARDENED NOZZLE BUSHING—resists wear and is a separate replacement part.

FREE-RUNNING PISTON—rides in guide sleeve with no rigid connection to gear train . . . reduces vibration and wear.

TANGENTIAL TYPE VENTILATION—a patented Thor feature that insures maximum cooling efficiency.

UNIVERSAL MOTOR—special hammer design with patented Thor construction in hand made armature and commutator . . . and patented flexible lead connections which prevent crystallization and breaking off of lead wires.

LARGE BALL BEARINGS—on all rotating parts . . . sealed against dust and dirt.

ALUMINUM-ALLOY HOUSING—for maximim strength and durability combined with light weight.

For complete particulars, specifications and prices on Thor Hammers and other Thor Portable Electric Tools that will help speed your installation jobs, write for Catalog No. 38.

Thor Portable Electric Tools

INDEPENDENT PNEUMATIC TOOL COMPANY

600 W. JACKSON BOULEVARD, CHICAGO 6, ILL.

Branches in Principal Cities

SOLD AND SERVICED BY LEADING DISTRIBUTORS EVERYWHERE



Efficient, Effective, Good-Looking

DESIGNED for high quality fluorescent lighting at lower cost, the BEACON is a "honey" for lighting essential offices or drafting rooms. Provides smooth, shadowless light to help handle paper work faster and reduce eyestrain.

Maintenance is especially easy since there are no horizontal surfaces on which dust can collect. New rigid design louvers are hinged to make lamp replacement simple.

Etched, ribbed glass on the side panels gives smooth pleasing light; louvers in the bottom of the unit prevent direct view of the lamps.

The new BEACON is of all-steel construction. Metal and caps are pierced in a decorative design and are backed up with diffusing, translucent plastic. And this 4-lamp fluorescent unit is available in stem suspension as pictured, or close-up mounting for low-ceiling areas. Ask your Graybar house for details on the BEACON or write us.

★ ★ ★

HELP PREVENT INDUSTRIAL ACCIDENTS . . . GUARD MOVING PARTS . . . HAVE GOOD LIGHT . . . BE ALERT.



THE F. W. Wakefield BRASS COMPANY

RED ● SPOT LIGHTING FOR WAR PRODUCTION . . . FOR PEACETIME FUTURE

VERMILION, OHIO

CORDLEY

Electric
WATER COOLERS

★ Cordley Electric Water Coolers are seeing worldwide action on ships of the U. S. Navy (Contracts NXs 9982 and NXsx 57045) and the Maritime Commission. These same battle-proven coolers are now available for war plants, hospitals, and military uses ashore. Write for data.

CORDLEY & HAYES
456 Fourth Ave., New York 16



Manufacturers of Water Coolers for 55 Years

(*Continued from page* 248)

being the first service man to cast the first Haverhill ballot for the November election.

C. L. Laude. Purchasing Agent for the Huron Portland Cement Co., Detroit, Mich., has been made general sales manager. He is succeeded by P. L. Biasell.

Sam A. Fis succeeds Allen Klatzker as Purchasing Agent for Federated Metals Division, Seattle, Wash.

E. J. Watson. Purchasing Agent for the Bozeman Canning Co., Mt. Vernon, Wash., has been promoted to assistant general manager. L. C. Hammersley succeeds him as Purchasing Agent.

H. P. Bersey has been appointed Director of Purchases for the Isolantite, Inc., Belleville, N. J.

John Splain. Purchasing Agent, Hub Industries, Inc., Long Island City, N. Y., has been appointed director of sales. He is succeeded as Director of Purchases by Joseph H. Lammerding.

Semy Ernest. Purchasing Agent, Hotel Commodore, New York City, has been appointed by Major Gen. Thomas A. Terry, commanding the Second Service Company, as one of eight restaurant and hotel men to serve as food consultants with the status of officers of his staff.

Lt. Gordon P. Bier, formerly buyer, General Purchasing Agent's office, I. C. R. R., is now supply and accounting officer of the United States Naval Air Station at Grosse Ile, Detroit, Mich., which is said to be one of the largest air stations in the primary command training naval aviators.

Private Newell C. Wotten, formerly Assistant Purchasing Agent with the Irvington Varnish and Insulating Company, Irvington, N. J., has been awarded the Purple Heart after being injured in France and is now doing clerical work in the adjutant general's office since recovering from a shrapnel wound in the hand.

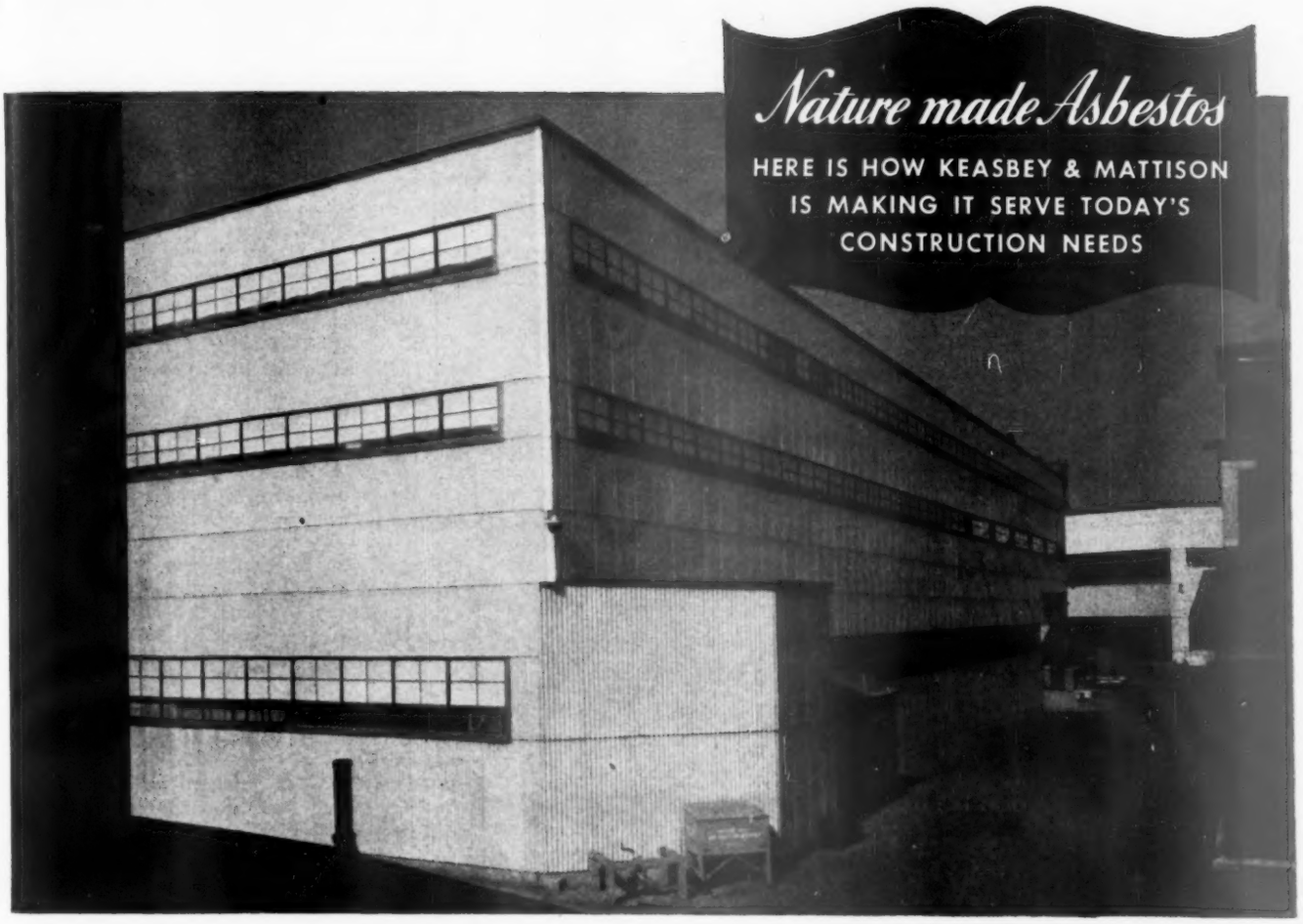
Ralph E. Wurster has been appointed Eastern Purchasing Agent for Jantzen Knitting Mills, with headquarters in New York City.

W. F. Oster has been appointed Purchasing Agent of the Peoria and Pekin Union Railway with jurisdiction over both purchases and stores department. He has been supervisor of stores since 1923.

Clyde C. Dibble has been appointed Assistant to Vice President, Purchases and Stores, New York Central R. R., Indianapolis, Ind. He formerly was supervisor of stores.

William O. Welsh has been appointed General Agent in charge of all Purchasing and shipping, United Seamen's Serv-

(*Continued on page* 254)



"Century" ASBESTOS CORRUGATED
BUILDS FOR PERMANENCE

In vital buildings like these—belonging to a large shipbuilding and iron works establishment—K&M "Century" Asbestos Corrugated has established its worth. It is a material that can be depended on for a century of service, strength, freedom from fire hazard.

"Century" Asbestos Corrugated is a tough material . . . produced by applying tremendous hydraulic pressure to a combination of asbestos fibre and portland cement. It has an attractive, cleancut appearance that never requires protective painting. It is amazingly adaptable and economical because it is maintenance free . . . the ideal siding and roofing material for buildings with an eye toward *permanence.*

K&M "Century" Asbestos Corrugated has ably filled all essential wartime demands made of it. Millions upon millions of feet are now serving vital purposes. Now this time-saving, money-saving material is again available for general use . . . for plant renovation and construction.

Meanwhile forward-looking research continues at K&M. New Asbestos products and processes are constantly being uncovered . . . and are being groomed to serve America when peace returns again.



Our Ambler plants proudly fly the Army-Navy "E" flag with its star—an honor awarded K&M employees "for continued outstanding production of war materials."

KEASBEY & MATTISON
COMPANY · AMBLER · PENNSYLVANIA

WYCO
HY-SPEED SAW



A Speedy, Accurate, Powerful Saw that is an essential tool for every metal or wood worker, machinist and mechanic.

SAWS and FILES

METALS • WOODS • PLASTICS

Fits any ¼" Electric Drill, Air Drill or Flexible Shaft.

Chucks in Drill Chuck or Collet.

Uses Ordinary Hack Saw Blades and Standard ¼" Shank Machine Files.

Easily Used in Difficult Places.

All rotating parts are Ball Bearing and run in oil — no gears — no cams — always smooth running. Saw chuck holds firmly and aligns saw perfectly.

$35.00

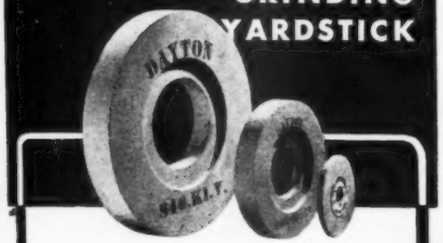
Complete with extra saw blade and ¼" round machine file.

A WYCO Guaranteed Tool — Send for Catalog on Complete Line of WYCO Profit Producing Tools and WYCO Flexible Shaft Equipment.

Distributed Only Thru Jobbers

WYZENBEEK & STAFF, Inc.
838-844 W. HUBBARD ST. CHICAGO, ILLINOIS

A PROVED SURFACE GRINDING YARDSTICK



If you are feeling your way on some surfacing operation . . . seeking a wheel of the grain, grade and structure that will do the job as your "spec" requires—use the 846 K-1-V Dayton as your "yardstick".

You may find, as so many have found, that it's exactly the wheel you are looking for. If not, you will find it at least surprisingly "close" to what you've got to have. So close, in fact, that selection of the correct wheel can then be made without further experimentation.

To save time, money, worry—put this 846 K-1-V Dayton to the test now. Made in a wide range of sizes—with trial wheels shipped from stock.

WIRE, WRITE OR PHONE TODAY

SIMONDS WORDEN WHITE CO.
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GRAND Speed CLAMPS
A Complete Line!



Many New and Larger Sizes Have Been Added

Screws, Swivels and Handles of all Grand Clamps are COPPER PLATED against Welding Spatter

QUIKCET — for fast (4-record) Clamping—Instant ratchet set and release, furcrum screw tightening, 1-hand operation and a non-creeping grip even on irregular surfaces. Setting the pace in war production.
DUAL GRIP—Double action malleable clamps. Side tightening for close working conditions. No twisting or creeping.
WELDERS' GROUND CLAMP. *Completely copper* plated, with connection for ground wire.
ALLOY-STEEL—Medium and heavy service "C" Clamps of *even greater than forget clamp capacity.* Opening, up to 18" and proof-test capacities up to 19,000 lbs.
QUICK LOCKCET—For light fast work. Special model for aluminum and soft metals.
HEAVY DUTY SPEED CLAMPS. 2-handed, lever locking and instant release. Complete range of sizes for large, heavy work.
These outstanding production clamps sell themselves on demonstration. Write for Catalog.



GRAND SPECIALTIES CO.
3115 West Grand Ave.,
Chicago 22, Ill.

(*Continued from page 252*)

ice, 39 Broadway, New York, N. Y. He formerly was Assistant Purchasing Agent of the Service which operates in conjunction with the War Shipping Administration, 118 medical, residential, recreation and personal service facilities throughout the world.

Gentry W. Yates has been appointed Purchasing Agent for the City of Portland, Ore. He was formerly city property custodian and has been employed by the city since the first World War in which he served as a bugler. He was wounded twice in the Meuse-Argonne drive.

Whipple Jacobs, president Belden Manufacturing Co., formerly Purchasing Agent of that company, spoke on "Management Reappraises Advertising" at the annual meeting of the National Industrial Advertisers Association, held in Chicago September 22nd and 23rd.

E. C. Scoville, Purchasing Agent, American Maize Products Co., also spoke before the meeting as a member of a "Reader-Buyer Round Table."

Ralph V. Carlson, Purchasing Agent, Fairmont Creamery, Omaha, Nebr., was one of ten "ten generals" selected to head "army" divisions of the Omaha Chamber of Commerce in a general membership campaign.

W. C. Andrews succeeds W. C. Miles as Purchasing Agent for the Gulf States Paper Corporation, Tuscaloosa, Ala.

Sergeant Henry Rosenbaum, formerly Purchasing Agent for the Schenley Distillers Corporation, New York, N. Y., has been selected to attend the Quartermaster Officer Candidate School at Camp Lee, Va. He was stationed at Headquarters, Panama Canal Department.

Nelson B. Winters was made Production Manager and Purchasing Agent of the W. H. Loomis Talc Corporation, Gouverneur, N. Y., at recent meeting of the board of directors.

Miss Lucile Barnett is now Purchasing Agent for the General Paint Corporation, Tulsa, Okla., succeeding K. J. Keating.

George Wilson, president of the Birmingham Association of Purchasing Agents addressed meetings of the Birmingham Credit Men's Association and the Bessemer Kiwanis Club.

R. E. McCullough succeeds Henry L. Beatty as Purchasing Agent for the Republic Supply Company, Houston, Texas.

R. D. Ormsbee, State Purchasing Agent, Santa Fe, N. W., reviewing the operations of his office before the Rotary Club, estimated that savings of from $50,000 to $75,000 had been effected since the office commenced functioning. Telling of

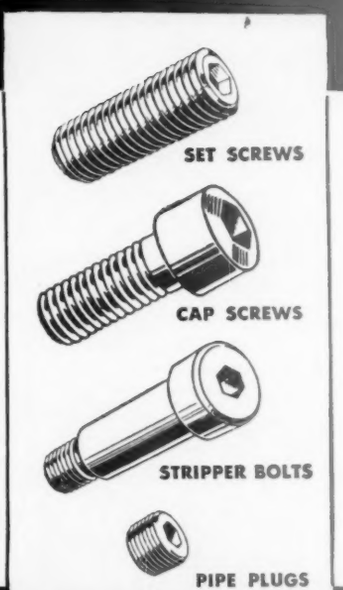
(*Continued on page 256*)



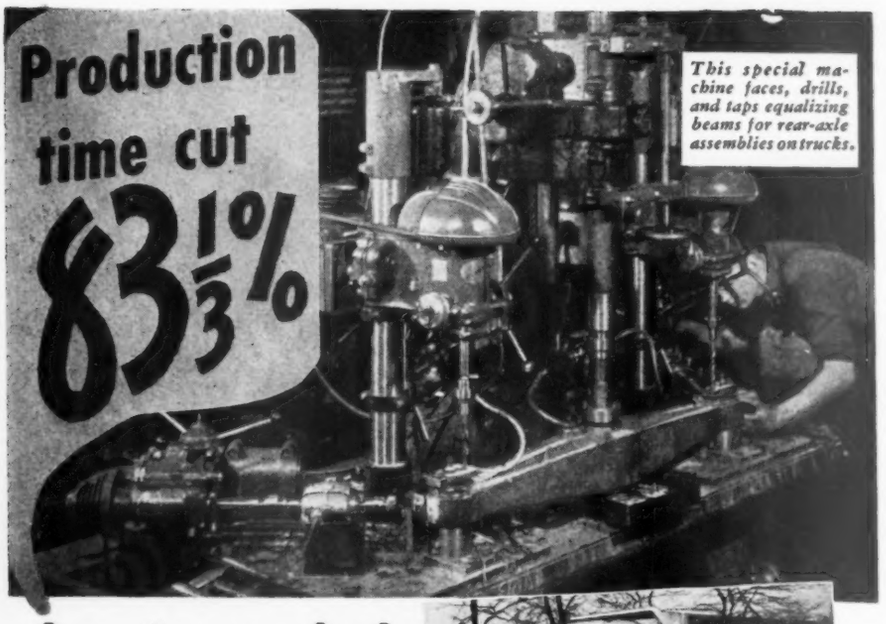
PARKER-KALON rules out socket trouble. First – by *cold-forging* to concentrate dense, tough metal where the strains are greatest. Second – by unequalled Quality Control over all physical and mechanical characteristics.

P-K's Quality-Control routine starts when the raw material enters the Parker-Kalon plant, and continues until the finished screws are packed. Tests and inspections cover Chemical Analysis; Tensile and Torsional Strength; Ductility; Shock Resistance under Torsion and Shear; Hardness; Head and Socket Size and Position; Thread Fit.

Socket Screw users need this protection today more than ever. Specify "Parker-Kalon" next time you order, it costs no more. Parker-Kalon Corp., 208 Varick St., New York 14, N. Y.



A Product of PARKER-KALON--Specialists in Fastening Devices



..by using standard, low-cost DELTA DRILL PRESS units to build this dependable special-purpose machine





DELTA'S 76-page Blue Book gives you 140 examples

—actual case histories in which special-purpose machines for war production were built around standard stock-model Delta components — low in cost, compact, readily available, and quickly adaptable when requirements changed. Your production engineers can develop similar ingenious combinations in reconverting for peace.

Write for your free copy.

Reducing a 90-minute operation to 15 minutes is typical of results in hundreds of plants which have employed this modern approach to tooling — without the delay and investment risk involved in buying costly, cumbersome, inflexible special machines.

The combination of standard Delta units and American ingenuity is unbeatable because Delta's savings in cost, weight, and space are not obtained at the expense of dependable accuracy. They result from advanced design — quantity production with the latest precision equipment for diamond-boring seats, precision-grinding shafts, dynamically balancing pulleys, pre-loading ball bearings — quality features such as double-sealed New Departure ball bearings.

You too can mechanize complicated operations quickly with a small outlay. Equip with Delta tools — in units, batteries, or special set-ups. Investigate!

MA-11

DELTA MILWAUKEE Machine Tools

THE DELTA MANUFACTURING CO.
643L E. Vienna Ave., Milwaukee 1, Wis.

Please send me my free copy of your new 76 page Blue Book and catalog of low-cost Delta Tools.

Name..... Position.....

Company.....

Address.....

City..... (.....) State.....

(*Continued from page* 254)

a survey of 233 purchase orders out of a total of 6,744, Mr. Ormsbee said it showed a difference of $25,858 between high and low bids on the same items.

Louis W. Mason, formerly Purchasing Agent, Tubular Alloy Steel Corporation, Gary, Ind., has been appointed assistant to general manager of sales of the National Tube Co., U. S. Steel subsidiary, with headquarters in Washington, D. C.

Loren B. Schoppe, assistant manager of Purchases, has been appointed Acting Manager of Purchases succeeding Mr. Mason.

Howard R. Painer has been made Secretary-Treasurer of the Midwest Rubber Reclaiming Company, St. Louis, Mo., being promoted from the office of Secretary-Treasurer and Purchasing Agent at their Barberton, Ohio plant. He first became connected with the company in 1925 when it was formed as the Akron Rubber Reclaiming Company. The Midwest Rubber Company was organized in East St. Louis in 1931.

Frank Sawonik was recently made Director of Purchases for the Hickok Electrical Instrument Co., Cleveland, Ohio. He has been with the company two years as traffic manager and head of the material control department.

John A. Pittner is Director of Purchases for the Pesco Products Co., Cleveland, O., succeeding Hugo H. Krause. Since 1941 he has been in charge of the planning and follow-up departments.

William Webster succeeds Lynn L. Lauden as Purchasing Agent for The Clark Manufacturing Co., Cleveland, Ohio. Mr. Lauden resigned recently terminating 22 years of service as Purchasing Agent.

Joseph T. Foster has been made Vice President of Public Service subsidiary companies, New York, N. Y., in charge of real estate and Purchases, and a director of these companies. He formerly was Purchasing Agent and is succeeded in that position by **Roy S. Rogers.**

YOU BUY FROM AMONG THE COMPANIES

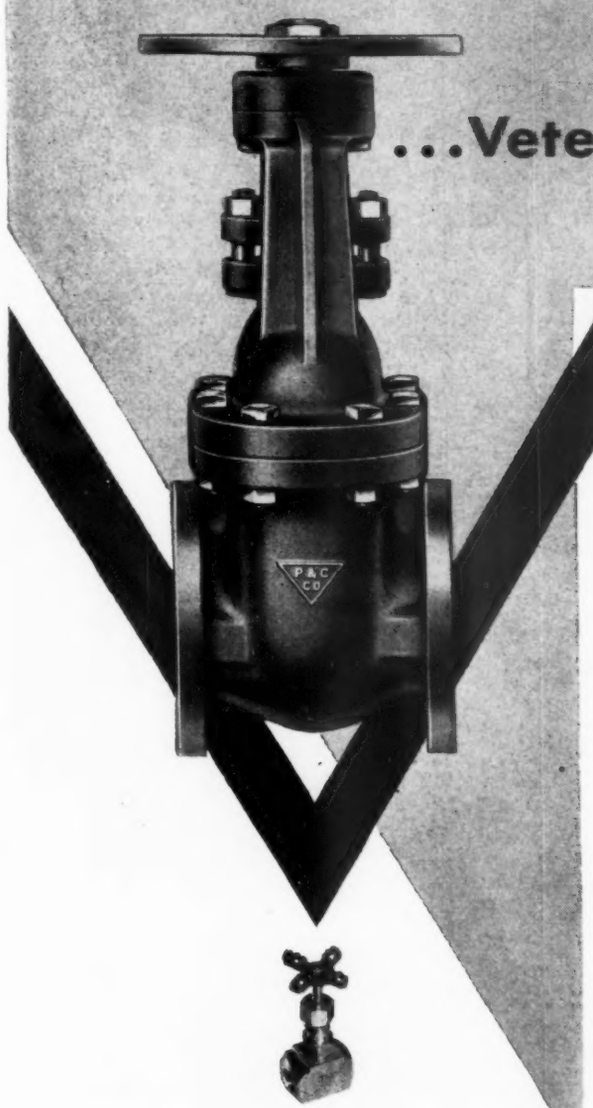
Stanley M. Johns has been named manager of the Salt Lake City office of the Westinghouse Electric & Manufacturing Company. He succeeds Frank E. Bodine, who will be in charge at San Francisco.

General Electric Company has announced three appointments in the Motor Division. **Elliott Harrington** has been named sales manager of a newly formed integral-horsepower, alternating current motor section, located in Schenectady. **J. T. Farrell** has been assigned sales manager of the direct-current section; **D. A.**

(*Continued on page* 258)

R VALVES P&C CO

...Veterans of long standing



READING Cast Steel Valves and Fittings since 1901 . . .

PRATT & CADY Brass and Iron Valves since 1878 . . .

D'ESTE Valve and Engineering Specialties since 1870 . . .

. . . veterans all. Yes, and pioneers—in the development of improvements to make valves function better, last longer, serve more efficiently and at lower over-all cost.

Thus, as a manufacturing organization, Reading-Pratt & Cady has long and *specialized* experience in the making of good valves. Moreover, Reading-Pratt & Cady serves you as a single responsible source for your valve requirements.

READING-PRATT & CADY

MANUFACTURERS OF

READING CAST STEEL VALVES AND FITTINGS • PRATT & CADY BRASS AND IRON VALVES
D'ESTE VALVE AND ENGINEERING SPECIALTIES

Reading, Pa., Atlanta, Boston, Chicago, Denver, Houston, Los Angeles, New York, Philadelphia, Pittsburgh, San Francisco

ACCO

A DIVISION OF AMERICAN CHAIN & CABLE COMPANY, Inc., BRIDGEPORT, CONNECTICUT



Here's the Skill to make Precision Parts

large or small — in any quantity

Western Automatic's production ingenuity assures you extraordinary precision — at war-demanded speed!

No matter how complicated the part or how exacting your specifications, if its size falls between 1/16" and 4 5/8" round, Western has the men and machines, the experience and skill to produce it, in war quantities, fast. The two pieces shown life-size above are but two of thousands of parts we've been making, many to still closer tolerances. You may need this kind of service now, you'll need it post-war. We'll be glad to quote on your requirements.

Our Business . . . is the manufacture of special screw machine products to specifications. Machine capacity ranges from 1/16" to 4 5/8" round, with complete equipment for all types of secondary and processing operations, including precision grinding, heat-treating, hardening and pentrating.

Western Automatic
Machine Screw Company
Elyria, Ohio, U. S. A.
Precision Screw Products, Parts and Assemblies Since 1873

(*Continued from page 256*)

Yates has been appointed assistant manager of sales of both sections and will be located at the Lynn River Works.

Roland J. Schmitt has been appointed manager of the Pacific Northwest Division of E. C. Atkins and Company, Indianapolis, Indiana. He will be in charge



Roland J. Schmitt **A. Stanley Caster**

of company activities in Oregon, Washington, Idaho and Western Montana. **A. Stanley Caster** of the same company has been promoted to office manager of the Portland, Oregon office. Both men will have their headquarters at the branch factory in Portland.

A. R. Toepfer, formerly connected with a large mill supply house has joined the Chicago-Latrobe Twist Drill Works as their district representative for the Wisconsin and Minnesota territory, with headquarters in Milwaukee.

William E. Kress has been appointed sales manager of the Middle West for Philco Corporation with headquarters in Chicago. He succeeds John M. Otter who was named sales manager for the Home Radio Division.

Donald Foster, Portland, Oregon, is the new Chicago branch manager of the

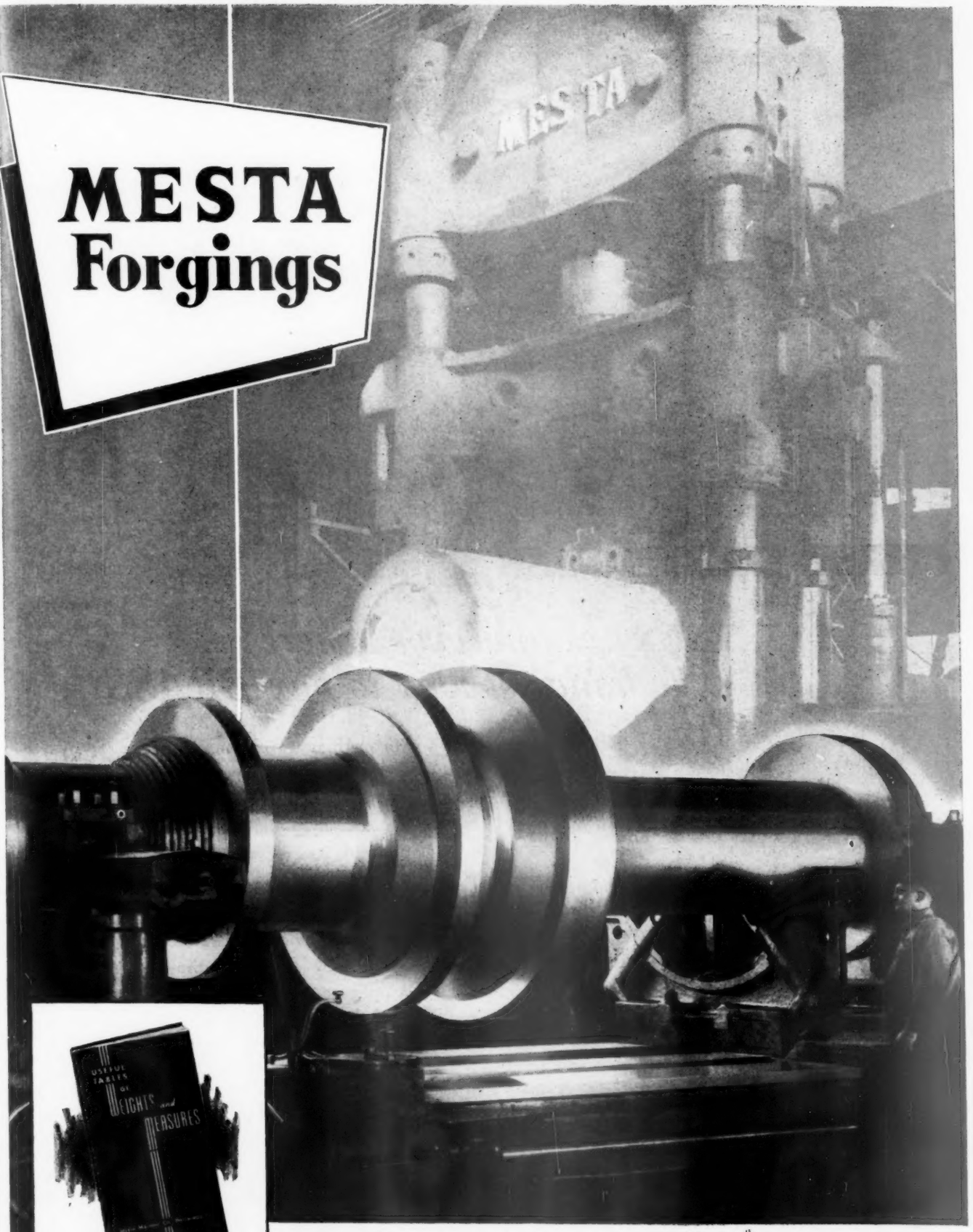


Hyster Company. C. C. Dunham, former Chicago manager, will go to the Portland factory as personnel manager. Mr. Foster with the company for several years was formerly with the Case Tractor Company and John Deere Plow Company.

The Weatherhead Company, Cleveland, Ohio, announces four appointments: **H. Church,** former manager of the aviation sales division is the appointed vice president in charge of sales. **Robert P. Gibson,** has been made vice president in charge of automotive sales. **George H. Hufferd,** has been named vice president in charge of engineering. **Morris H. Wright,** former-

(*Continued on page 262*)

MESTA Forgings

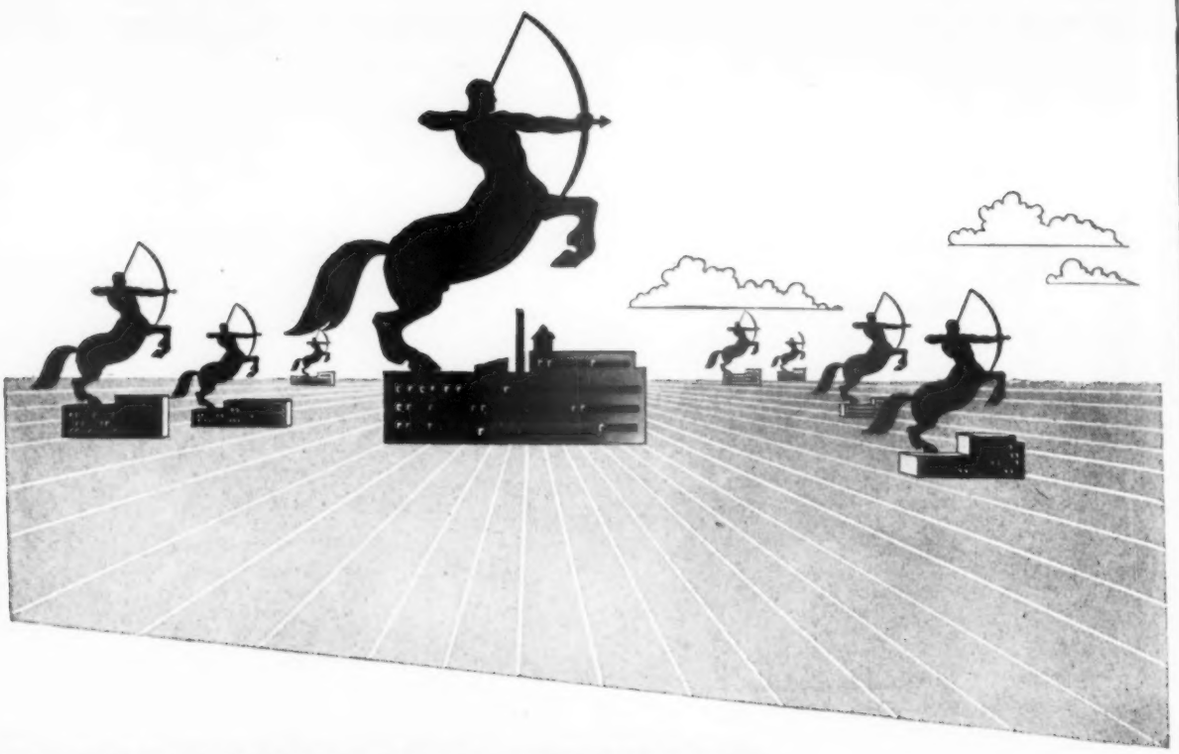


Send for your copy of this 64 page booklet containing valuable engineering data. Address your requests to Dept. A-10

MESTA MACHINE COMPANY
Pittsburgh, Pa.

ARMY (E) NAVY

Back The Attack
Buy War Bonds



CHASE WAREHOUSE SERVICE

Always and everywhere the handiest way to buy BRASS

YOU'LL welcome, in times like these, the convenience and efficiency of Chase Sales Service Offices. It's like having a complete mill organization, right in your area, to help on purchasing problems in brass.

For example, the Chase Warehouse nearest you is part of a nationwide network of warehouses, staffed with informed personnel and stocked with good Chase brass mill products. Whether it's information you want, or material, Chase is equipped to deliver—and quickly.

On ordinary problems in copper alloys, you will get your answer, usually, right then and there. Special problems are turned over immediately to the Chase research organization with its vast resources, for prompt (and expert) attention.

This "main office" service of Chase is not new...long before the war, alert purchasing agents were consulting the nearest Chase Warehouse or Sales Office. In post-war it should be just as true—*it's the handiest way to buy brass.*

CHASE

Remember — CHASE SERVICE IS AS NEAR AS YOUR PHONE

CHASE BRASS & COPPER CO.

—Incorporated—
Waterbury, Connecticut
SUBSIDIARY OF KENNECOTT COPPER CORPORATION

ALBANY †
ATLANTA †
BALTIMORE
BOSTON
CHICAGO
CINCINNATI
CLEVELAND
DETROIT
HOUSTON
INDIANAPOLIS †
KANSAS CITY, MO. †
LOS ANGELES
MILWAUKEE



MINNEAPOLIS
NEWARK
NEW ORLEANS
NEW YORK
PHILADELPHIA
PITTSBURGH
PROVIDENCE
ROCHESTER †
SAN FRANCISCO
SEATTLE
ST. LOUIS
WASHINGTON †

† Indicates Sales Office Only

This is the Chase Network—handiest way to buy brass



NOW...ANOTHER REVOLUTIONARY PRODUCT OF PHILCO BATTERY RESEARCH!



The New "PHILCO Thirty" gives 30% Longer Life

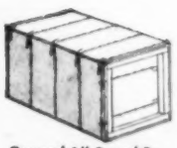
A few months back Philco pioneering gave industry the outstanding development in stationary batteries—Philco Vitrabloc. Today, Philco engineering research scores again—with the top advance in motive power batteries—the new "Philco Thirty." With 30% longer life, and *more*—with new economy in maintenance and lower depreciation—here is headline battery news. Here, for the first time in any battery, is a revolutionary new principle of fabricated insulation—developed, proved and backed by Philco. Here, too, is that famous 10% extra work capacity made possible by Philco's modern plate design. Ready today, is this great new post-war battery—the new "Philco Thirty"—now available in certain types and limited quantities. Write for full information.

PHILCO CORPORATION, *Storage Battery Division, Trenton 7, New Jersey*

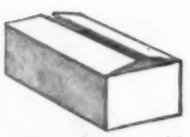
For 50 Years a Leader in Industrial Storage Battery Development



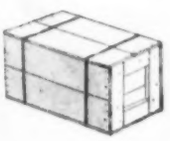
"Gramp" Was Proud as Punch!



General All-Bound Box

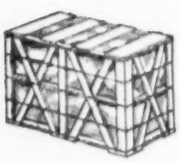


General Corrugated Box

General Nailed Box 



General Cleated Fibreboard Container



General Wirebound Crate

YES . . . Grandfather was very proud indeed of his cigar case . . . and how well it tells our story. It provided protection . . . it was lightweight . . . it neatly nested the product.

And so, today, GENERAL engineered shipping containers are specifically designed for the product . . . designed to provide ample protection . . . streamlined to save space . . . constructed of sturdy, light-weight materials to expedite handling and cut costs. Frequently GENERAL engineers have suggested minor product changes that have increased production and substantially reduced material and shipping costs.

While GENERAL engineered shipping containers are today shipping vital supplies throughout the world, we, too, are planning to serve you with improved containers tomorrow!

Get acquainted now with the many advantages of GENERAL'S "Part of the Product" plan. Write today. Our engineers will be glad to help you with your packing problems.



Send for "The General Box"— this booklet illustrates General Box Company's "Part of the Product" Plan.

ENGINEERED SHIPPING CONTAINERS

General BOX COMPANY

GENERAL OFFICES: 48 West Illinois St., Chicago, Ill.

DISTRICT OFFICES AND PLANTS: Brooklyn, Cincinnati, Detroit, East St. Louis, Kansas City, Louisville, Milwaukee, New Orleans, Sheboygan, Winchendon.

Continental Box Company, Inc.: Houston, Dallas.

(*Continued from page* 258)

ly assistant general manager of the Acme Steel & Malleable Company has been appointed assistant to the president.

Carlton S. Phillips has been appointed as New York manager of the L. S. Starrett Company, Athol, Massachusetts. He has been associated with the company since 1912.

R. M. Hill has been named assistant general sales manager in charge of the



newly organized Gasket and Packing Department of the Armstrong Cork Company. He will be assisted by Lewis Woolsey as assistant sales manager and by George Hodge in the capacity of a specialist in synthetic rubbers.

Charles L. Saunders, former vice president of Minneapolis-Honeywell Regulator Co., has resigned as branch chief of the WPB Office of Civilian Requirements, to become vice president of Wheelco Instruments Company, Chicago.

L. F. Weyand, general sales manager of the Minnesota Mining & Manufactur-



ing Company's Adhesive and Coatings Division, has been promoted to general manager. He will continue to maintain headquarters in Detroit.

E. J. Del Vecchio has been appointed field sales manager for the Progressive Welder Company. He will supervise operation of all activities outside of the Detroit area. At the same time, Harry S. Rose has been named sales manager of the Detroit district.

Philip M. Pritchard, a member of the sales staff of Sylvania Electric Products, Inc., radio division for the past eight years has been advanced to manager of

(*Continued on page* 264)



These tools of MO-MAX

TRADE MARK REG. U.S. PAT. OFF.

HIGH SPEED STEEL

have 154,999,999 brothers!

MO-MAX tool totals run into "box-car figures". For example, one tool maker alone has turned out no less than 155 million cutting tools of MO-MAX. From this you can judge the wide acceptance now enjoyed by the first commercially available molybdenum high speed steel, a steel that has proved its leadership in ten years of test and performance.

MO-MAX has superior cutting quality. It is a happy combination of great toughness and high hardness. Its basic composition is long established and obtainable from any sources. Special varieties, such as the cobalt types and hot die steel have been developed, and are available to those who need them.

MO-MAX HIGH SPEED STEEL — YEAR AFTER YEAR *One Uniform Standard*



Important facts about MO-MAX are presented, along with other useful information, in an illustrated, chart-packed technical data book which is yours for the asking.

CLEVELAND TWIST DRILL CO.
1242 E. 49th St., Cleveland 14, O.

THEY'RE ALL MO-MAX

"LMW"	Allegheny Ludlum Steel Corp.	"Molite 8"	Columbia Tool Steel Company	"Tatmo"	Latrobe Electric Steel Co.
"Mohican"	Atlas Steels, Ltd.	"Rex-T-Mo"	Crucible Steel Co. of America	"S. T. M."	Simonds Saw and Steel Co.
"Bethlehem HM"	Bethlehem Steel Company	"Di-Mol"	Henry Disston & Sons, Inc.	"Mo-Tung"	Universal-Cyclops Steel Corp.
"Mo-Cut"	Braeburn Alloy Steel Corp.	"Rex-T-Mo"	Halcomb Steel Co.	"8-N-2"	Vanadium-Alloys Steel Co.
"Star Max"	The Carpenter Steel Co.	"Mogul"	Jessop Steel Company	"Vul-Mo"	Vulcan Crucible Steel Co.

5947

TRADE MARK
SINCTUIT
REG. U. S. PAT. OFFICE

COATING
LAMINATING
QUICK SERVICE

Quality for 65 Years
ADHESIVE TAPES
COMBINING
CLOTHS BACKED
SKINS BACKED
BACKING CLOTHS
COATING
LAMINATING
RUBBERIZING

ADHESIVE and chemical mix coatings expertly applied to paper, cloth, foils and other materials.

Fabrics backed, laminated or combined to your specifications, and special purpose formulas developed in our own Laboratory.

65 years of "Know-How" deliver "Use-Proved" tapes and backings deserving the enthusiastic approval they earn on the production lines.

Just tell us what your problem is and let our Laboratory, backed by their years of specialized experience in synthetics, help you find the perfect solution.

Let Mr. George L. Peters, E.M., Columbia 1911, head of our Engineering Staff, suggest from our formulas those experience indicates as best suited to your particular needs.

CHICAGO, ILL.
H. Rabin, 30 No. LaSalle St.
LOS ANGELES, CAL.
A. B. Boyd Co., 763 E. 14th St.
PETERSBURG, VA.
Wm. A Bragg, 224 No. Sycamore St.
PORTLAND, ORE.
A. B. Boyd Co., S. E. Union & Morrison
SAN FRANCISCO, CAL.
A. B. Boyd Co., 1235 Howard St.
SEATTLE, WASH.
A. B. Boyd Co., 404 Dexter Ave.
ST. LOUIS, MO.
C. E. Wilkins, 1602 Locust St.
WALLASTON, MASS.
S. B. Scott, 123 Elm St
CAPE TOWN, S. A.
K. Stein Agency Co., 12 Plein St.

Peters Bros.
RUBBER COMPANY, INC.
160 168 JOHN ST., Brooklyn, N.Y.
ESTABLISHED 3 GENERATIONS

PLYWOOD

Pacific Mutual Door Co.

QUALITY PAMUDO SERVICE

National Distributors
DOUGLAS FIR PLYWOOD
Since 1921
Mills: OREGON, WASHINGTON
Home Office: TACOMA 1, WASH.

Six Branch Offices and Warehouses
CHICAGO 8, ILL. ST. PAUL 4, MINN. KANSAS CITY 3, KAN.
GARWOOD, N. J. BALTIMORE 31, MD. LOS ANGELES 21, CAL.

WRITE US FOR PRICE LIST AND GRADE USE GUIDE

(*Continued from page* 262)

Equipment Tube Sales for the East Central Division, with headquarters at the New York office.

Leon H. Marsh has been elected vice president and sales manager of the Kennedy Valve Manufacturing Company, Elmira, New York. He has been associated with the company for more than 25 years.

Fred A. Koepf, until recently assistant manager of Link-Belt Company at Los Angeles, has been advanced to the posi-



F. A. Koepf G. T. Lundquist

tion of district manager for northwest Pacific Division territory with headquarters at Seattle. **George T. Lundquist,** until recently assistant to H. V. Eastling, vice-president and sales manager, San Francisco, succeeds Mr. Koepf as assistant manager at Los Angeles.

Littleton C. Barkley, of the New York office of The Manhattan Rubber Mfg. Divn. of Raybestos-Manhattan, Inc., has been appointed sales manager of the Manhattan Mechanical Rubber Goods Sales Department, with headquarters at 120 Broadway, New York.

William G. Waltermire has joined the Lamson & Sessions Company of Cleve-

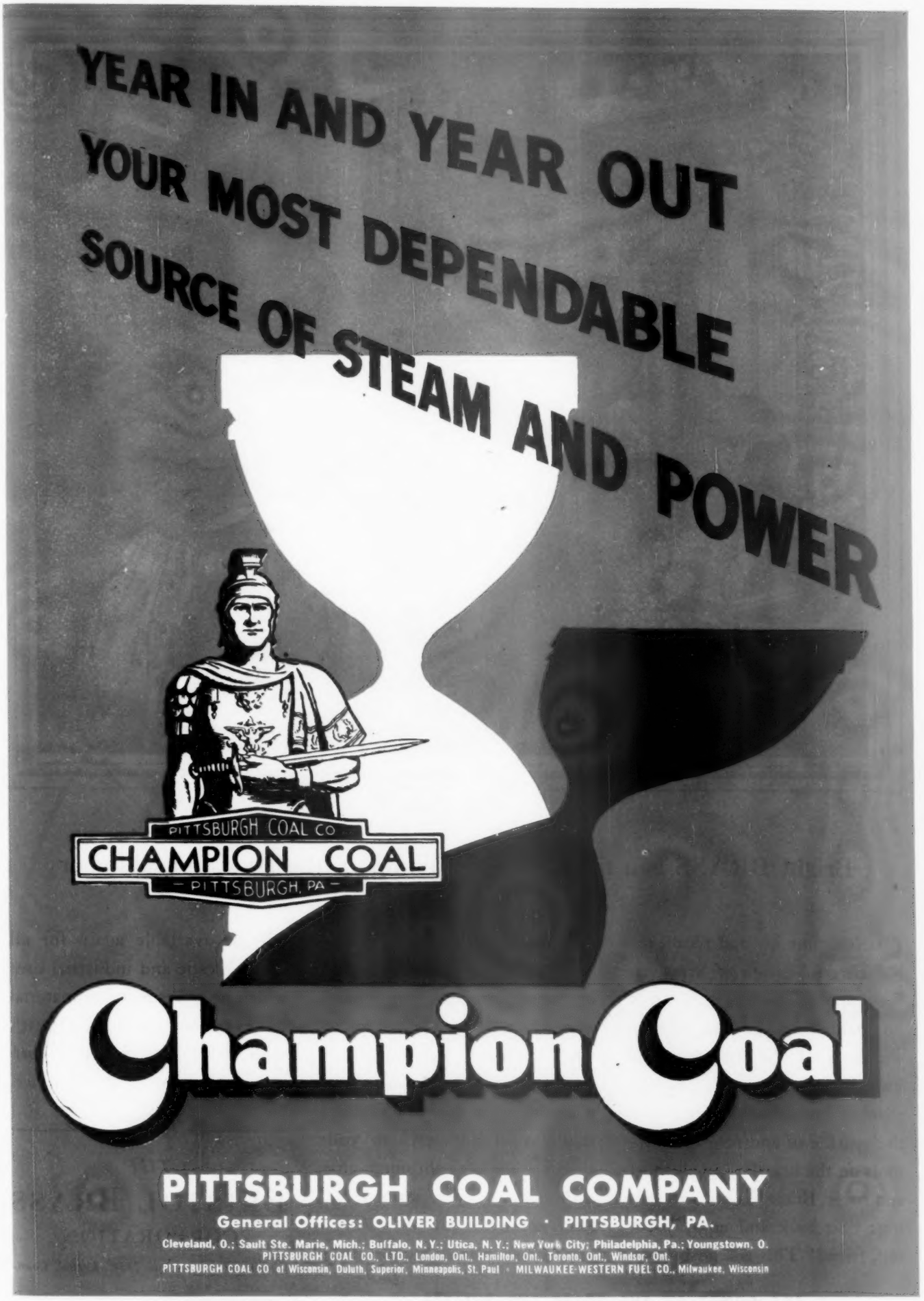


land as sales engineer. He was staff engineer for the National Screw Machine Products Association, and previous to that, he was connected with Cleveland Ordnance Department in key capacities.

Brendan Sullivan has been appointed advertising supervisor of General Electric's resin and insulation materials division in Schenectady.

William C. Seccombe, long associated with George William Finegan who represented the Kelley-Koett Manufacturing Company, Covington, Kentucky, now heads the George William Finegan, Inc.,

(*Continued on page* 268)


YEAR IN AND YEAR OUT
YOUR MOST DEPENDABLE
SOURCE OF STEAM AND POWER
PITTSBURGH COAL CO
CHAMPION COAL
PITTSBURGH, PA
Champion Coal
PITTSBURGH COAL COMPANY
General Offices: OLIVER BUILDING · PITTSBURGH, PA.
Cleveland, O.; Sault Ste. Marie, Mich.; Buffalo, N. Y.; Utica, N. Y.; New York City; Philadelphia, Pa.; Youngstown, O.
PITTSBURGH COAL CO., LTD., London, Ont., Hamilton, Ont., Toronto, Ont., Windsor, Ont.
PITTSBURGH COAL CO of Wisconsin, Duluth, Superior, Minneapolis, St. Paul · MILWAUKEE-WESTERN FUEL CO., Milwaukee, Wisconsin



Bright BRASS is a time-honored Badge of the good housekeeper

SINCE time beyond recall, the cheerful gleam of Brass has been one of the bright spots of home-making. In the shining welcome of the knocker and knob on the door . . . in the glow of burnished lamps . . . in the sparkle of andirons and fire-tools on the hearth . . . in all these and more, Brass has a way of saying: "Sit back and enjoy yourself, friend! This is a hospitable, self-respecting household."

Likewise, to many fabricators of home furnishings and hardware, the name of Bristol for 94 years has said: "You can always bank on Bristol Brass for easily workable, non-corrodible alloys that conform exactly to your specifications . . . shipment after shipment . . . year after year." And, come the day when Allied guns cease firing, Bristol Brass will be available again for all the domestic and industrial uses which no other metal or material has ever been able to fulfill with such complete satisfaction *both* to manufacturer and consumer.

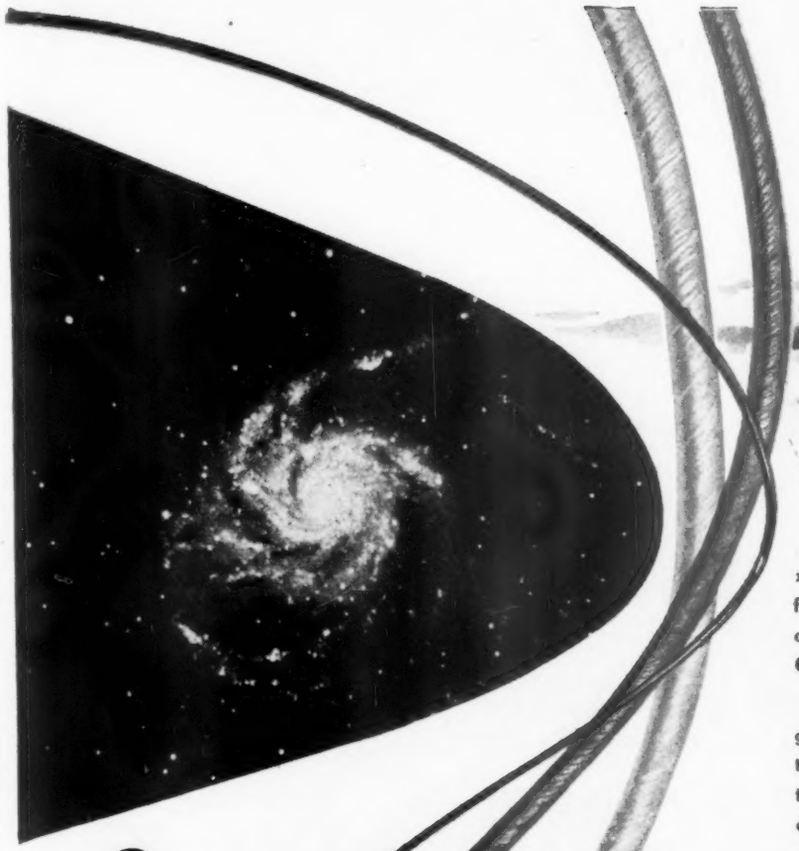
THE

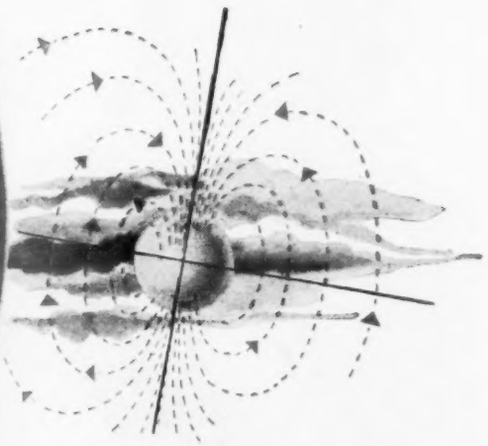
BRISTOL BRASS

CORPORATION

Makers of Brass since 1850, Bristol, Conn.

★ BUY BONDS TO BUY BRASS FOR BULLETS ★





» **THE MANUFACTURER PLANNING AHEAD** for a favorable place in the post-war sun can profitably look to The LELAND Electric Company for valuable assistance.

For here at LELAND, *Creative Electrical Engineering* and advanced technical skill are teamed together to tackle the knottiest electrical problems, and solve them, effectively and economically. Industry, facing an exacting competitive era, can use LELAND ingenuity and experience to advantage. We invite you to consult with us.

Creative Electrical Engineering



THE Leland *ELECTRIC COMPANY*

DAYTON 1, OHIO

In Canada, Leland Electric Canada, Ltd., Guelph, Ontario

THIS GASOLINE DISPENSING PUMP MOTOR was first to receive Underwriters' OK. Explosion-resisting, intermittent duty, supplied with or without built-in switch, overload protection and voltage change switch.



the Difference

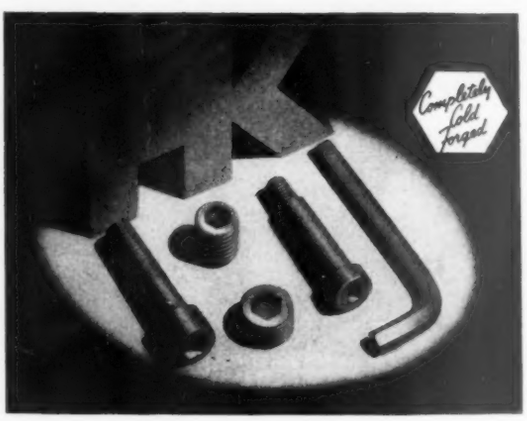
SOCKET SCREWS

√Completely Cold Forged

by HOLO-KROME

● SOCKETS, UNIFORMLY ACCURATE TO FULL DEPTH OF HOLE - TRUE HEXAGONAL SHAPE - ACROSS FLAT SECTION DIAMETER IDENTICAL TOP AND BOTTOM - NO TAPER - SMOOTH REGULAR WALLS - WELL DEFINED CORNERS ● SMOOTH FLAT TOP WITH SLIGHT CHAMFER ● CONCENTRICITY OF HEAD WITH BODY ● CONTINUOUS FIBRES ENDING IN SOCKET WALLS ● REINFORCED SOCKET WALLS ● CONTINUOUS UNBROKEN FIBRES ● CONTINUOUS UNCUT FIBRES ● CONTINUOUS UNCUT LATERALLY DEFLECTED CORE FIBRES ● INCREASED STRENGTH ● SQUARE SHOULDERS ● RADIUS FORGED, MACHINING UNNECESSARY ● ORIGINAL CONTINUOUS FIBROUS STRUCTURE . . . . .

FIBRO FORGED is the registered trade name of Holo-Krome Completely Cold Forged Socket Screws. The Holo-Krome patented method produces a finer quality Socket Screw . . . A few of the many exclusive features of Holo-Krome Completely Cold Forged Screws shown above. Study them! Note particularly the continuous fibres running from end to end! Uninterrupted, unbroken, unsevered! That's Completely Cold Forging! And Completely Cold Forging is Holo-Krome.



√ METHOD PATENTED, OWNED, CONTROLLED AND EXCLUSIVELY USED BY HOLO-KROME.

THE HOLO-KROME SCREW CORP. — SOCKET SCREW PRODUCTS — HARTFORD 10, CONN. U.S.A.

(*Continued from page 264*)

sales and service organization which will continue as Kelley-Koett representatives.

Glen H. Treslar has been elected to the board of directors and the executive committee of the Black and Decker Mfg. Co., Towson, Maryland.

H. C. Kenyon has been advanced to the position of general sales manager of the



Inland Rubber Corporation, a subsidiary of the Minnesota Mining and Manufacturing Company, with headquarters in Chicago.

Robert L. Miller, assistant sales manager of Norma-Hoffman Bearings Corporation, has been promoted to Eastern sales manager. At the same time Carl W. Hedler has been named Western sales manager.

Arthur M. Morgan, vice president in charge of sales of Latrobe Electric Steel Co., of Latrobe, Pennsylvania, has been elected a director of that company. He has been associated with them for the past 15 years, and became vice president in 1942.

James S. Rose has been appointed manager of the newly enlarged San Francisco



branch office of the Ilg Ventilating Company of Chicago. He has been employed in Ilg's Cleveland office for the past two years.

G. F. Golby has been appointed manager of the Toronto office of the Jessop Steel Company of Washington, Pennsylvania.

Wayne Martin, formerly assistant materials engineer with Sperry Gyroscope has been named sales engineer for the National Smelting Company, Cleveland. His experience will be available to those interested in aluminum and magnesium casting alloys.

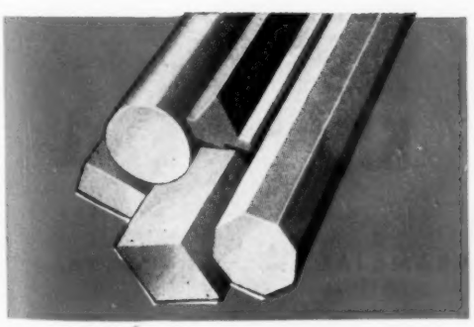
WYCKOFF

special furnace treated steel



the answer

TO MANY OF YOUR POST-WAR COLD FINISHED CARBON AND ALLOY REQUIREMENTS



WYCKOFF STEEL CO.

ARMY E NAVY

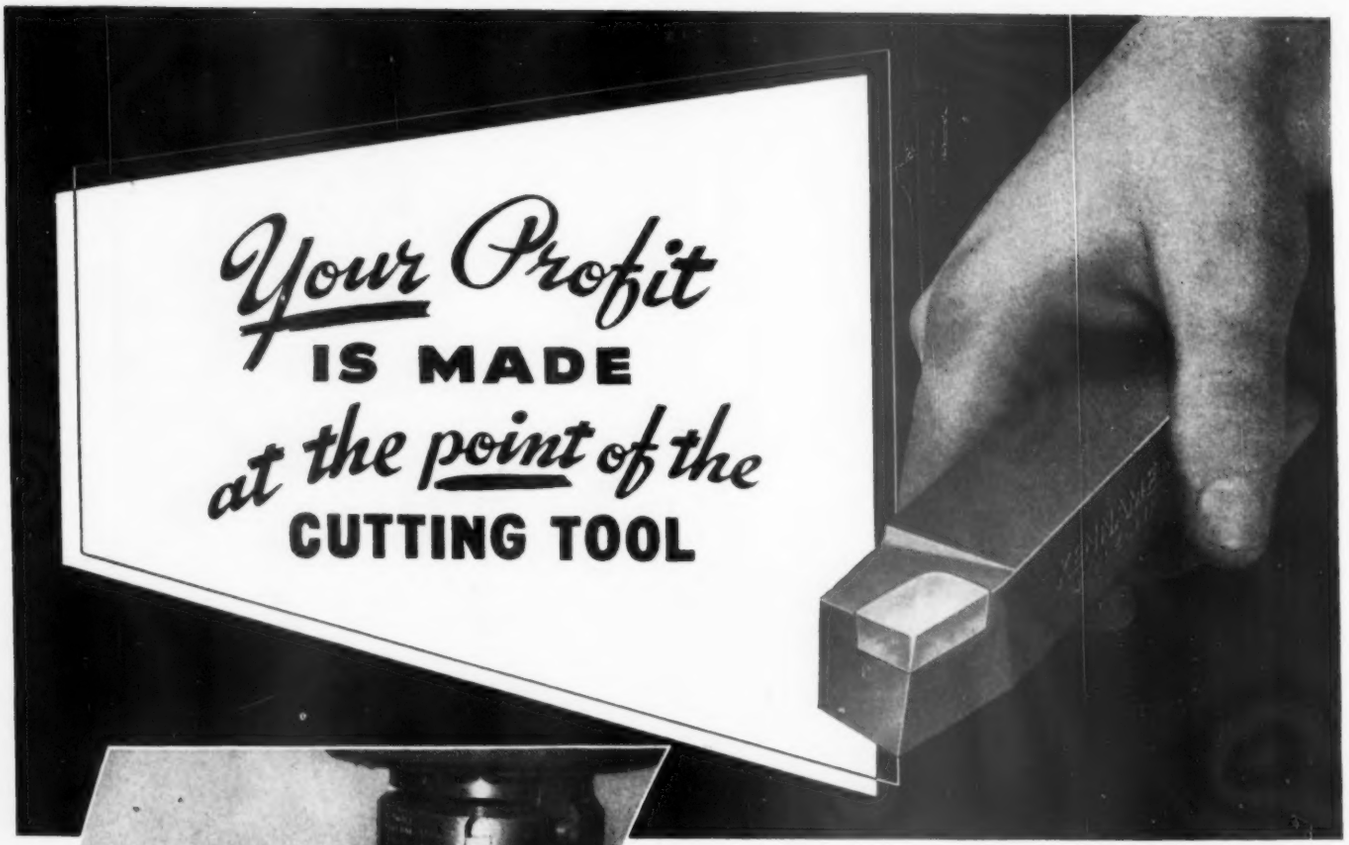
COLD FINISHED STEEL WYCKOFF

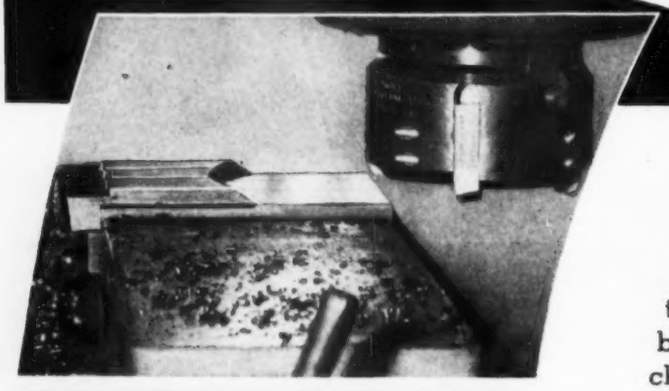
General Offices: **PITTSBURGH 30, PENNA.**

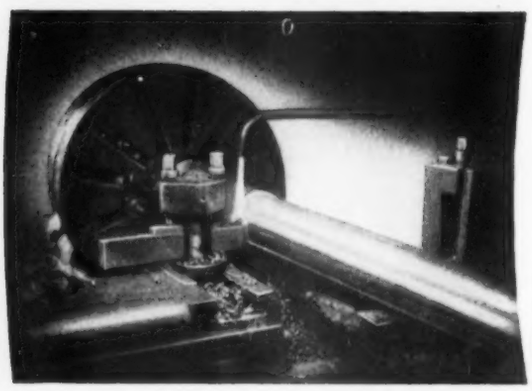
Works: **AMBRIDGE, PENNA.; CHICAGO, ILL.; NEWARK, N. J.; PUTNAM, CONN.**

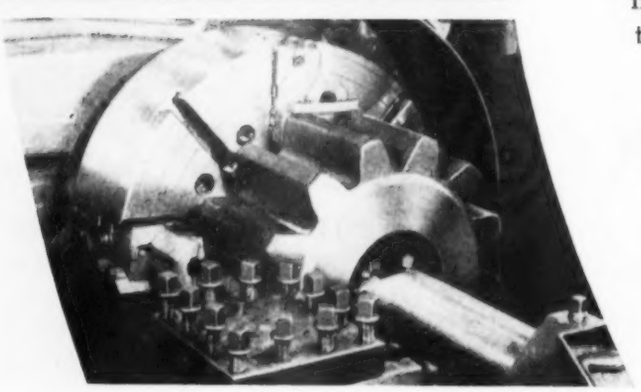
Manufacturers of Carbon and Alloy Steels . . . Turned and Polished Shafting . . . Turned and Ground Shafting . . . Wide Flats up to 12" x 2".

COMPLETE ANNEALING AND HEAT TREATING FACILITIES









The output of America's gigantic metal-working industry—in war or peace—depends upon the effectiveness of a small edge on cutting tools. When the cutting edge is Kennametal—as demonstrated by scores of service results—the productivity of machines can be more fully utilized.

Kennametal-tipped tools—through their unique ability to cut metals, including steels of high Brinell hardness, accurately, at greatly increased speeds, and with amazing tool life—have been of inestimable aid to industry in turning out the tools of war on time. They will be equally indispensable in producing improved products of peace, at lower prices.

Thus, Kennametal—in common with other inventions that have been brought forth under the American system of free enterprise—returns profit, not just to its inventor, nor only to the industries in which it functions, but . . . chiefly to all our people.

KENNAMETAL

TRADE MARK REG. U. S. PAT. OFF.

SUPERIOR CEMENTED CARBIDES

KENNAMETAL Inc., LATROBE, PA.

FIGHTING THE FOES OF HUMANITY



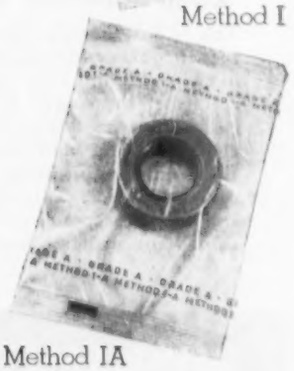
...in Peace after War

★ In war—by protecting vital supplies to our armed forces. In peace—by protecting consumer goods against contamination. Our multi-printed Cellophane and Glassine bags and wrappers for food and other products mean sanitation, eye-appeal and increased sales.

Pioneering a better way of life is the American habit. Whatever your product, we, as pioneers in modern packaging, can help you plan an improved package for your present or post-war use.



Method I



Method IA

Buy More War Bonds

Traco-Packs • Traversheen • Traverwrap • Cellophane Bags "Tite-Seal" Liners • Multi-Color printed Cellophane and Glassine in Sheets or Rolls • Loxtite Fillers • "Loxtite"

Patents Applied for

TRACO *Packaging Perfection*

TRAVER CORPORATION

Dept. P10, 358-368 West Ontario Street, Chicago 10, Illinois

M·S·A
EYE PROTECTION
MEETING THE NEEDS
OF THE MODERN WORKER

LOOKS
ALL PLASTIC GOGGLES



LIGHT WEIGHT—
WIDE VISION—COMFORT

These new lightweight all-plastic goggles afford wide vision and comfortable eye protection against light-flying particles. LOOKS are strong and durable, yet low in cost. The large "aviation-type" lenses of clear or green polished acetate are easily replaceable. Furnished in two models: General Purpose and Dust; either model available with either clear or green lenses. Write for Bulletin No. CE-25.

M·S·A GOGGLE CLEANING CABINET



CONVENIENT—
COMPACT—TIME SAVING

The M.S.A. Goggle Cleaning Cabinet encourages the worker to wear his goggles and keep them clean. A tap of the finger releases the right amount of Fogpruf—an efficient cleaning and anti-fogging agent on the goggle lenses. Convenient Optical Wiping Tissues and waste receptacle are provided within this handy cabinet. Designed for wall mounting. Write for Bulletin No. CE-24.

MINE SAFETY APPLIANCES COMPANY
BRADDOCK, THOMAS AND MEADE STS., PITTSBURGH, PA.
District Representatives in Principal Cities

MANUFACTURERS' DEVELOPMENT

Bliss & Laughlin, Inc. has opened new sales office in Hartford, Conn., at 650 Main St., under the direction of Walter A. Fairchild.

Carrollton Mfg. Co., Carrollton, Ohio, makers of stainless steel ware, has purchased buildings, equipment, etc., formerly held by Carrollton Metal Products Co. Trade name Carlton Ware will be retained. Ned Wynn is manager of sales.

Norton Co., Worcester, Mass., announces appointment of Fred L. Curtis as manager of sales engineering department. Fred W. Grand has been made merchandising engineer, Paul H. Carlson, abrasive engineer, Milwaukee, Wis., and E. C. Willey, abrasive engineer, Moline, Ill.

Carboloy Co. of Detroit has appointed Garrett Supply Co., 3844 South Santa Fe., Los Angeles, Calif. as distributor for the Southern-Arizona area; supplementing operations of the company's Los Angeles branch.

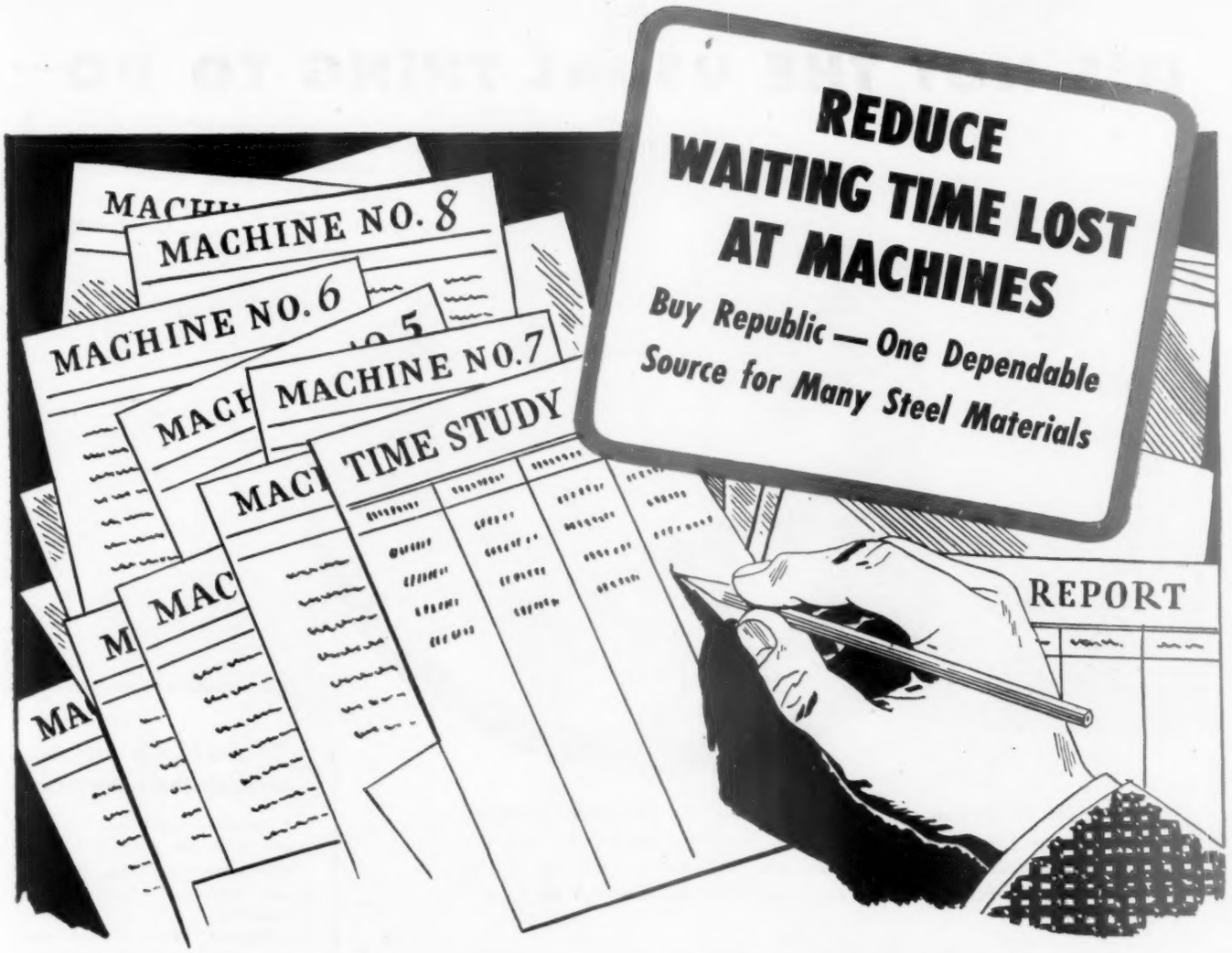
Royal Electric Co., Inc., Pawtucket, R. I., announces that it has purchased the fuse business of the fuse division of Colt's Patent Fire Arms Mfg. Co., acquiring patents, trade-mark, tools and equipment for the production of the Colt "Noark".

Fairbanks, Morse & Co. Chicago, Ill., has purchased the Pomona Pump Co., a division of Joshua Hendy Iron Works. Pomona has plants in Pomona, Calif. and St. Louis, Mo. Pomona pumps hereafter will be knwn as Fairbanks-Morse-Pomona, and Fairbanks-Morse-Westco line. With this acquisition, it is said that Fairbanks-Morse becomes the world's largest manufacturer of turbine pumps.

Interchemical Corporation, New York, has acquired Murphy Varnish Co., Newark, N. J. and Scriver & Quinn, Los Angeles, Calif. Name of former has been changed to Murphy Finishes Corporation with present management and personnel. Heretofore Interchemical Corporation's activities in the industrial finishes field have been carried on by its Ault & Wiborg Division. Murphy company also has plants in Chicago and San Francisco. The three units will continue to operate independently.

Bowser, Inc., Detroit, Mich., announce the formation of a "Special Products Division" to carry on in the post war period, activities which it is hoped will absorb the vast amount of equipment acquired by Bowser, Inc. for war work. J. S. Allen, vice president in charge of Sales of the Fostoria Screw Co., Bowser subsidiary will also serve as Director of the new division, with headquarters at 541 New Center Building, Detroit. The

(*Continued on page 276*)



War production time lost due to lack of material has made many production men rave. You've probably heard them (most purchasing agents have), and here's a suggestion that may take you off the spot.

Use the full line of Republic Steels and Steel Products to best advantage. By specifying Republic whenever possible, you can save time in finding new, reliable sources, cut detail and bookkeeping, reduce time and expense in contacting suppliers. And this often means orders get out faster, materials come in sooner, output is higher.

The reason is this: Republic gives you one reliable source for many materials. There are carbon, alloy and stainless steels—Bessemer, open-hearth and electric furnace steels—semi-finished and finished products made from them—flat rolled items—pipe and tubing—hot rolled and cold drawn bars—headed and threaded products—wire and fencing—steel building materials—and other items.

Republic also offers you the use of its extensive experience as a top-rank steel producer and fabricator to aid in selecting the best materials and working processes.

So check each materials requisition with the Republic Products Book 199-A and pool as many items as possible on one Republic order. Write for Book 199-A now.

REPUBLIC STEEL CORPORATION
GENERAL OFFICES • CLEVELAND 1, OHIO
Berger Manufacturing Division • Culvert Division
Niles Steel Products Division • Steel and Tubes Division
Union Drawn Steel Division • Truscon Steel Company
Export Department: Chrysler Bldg., New York 17, N. Y.

Republic STEELS AND STEEL PRODUCTS

IT'S NOT THE USUAL THING TO DO—



★*Taylor Forge was the first, and is still the foremost, manufacturer of forged and rolled steel welding necks, nozzles and channel sections. An unusual and interesting forging of this kind is the blind channel section with side openings illustrated above.*

You can be sure that in these crowded days we are not seeking unusual forging assignments. Our sole purpose in citing this, and similar out-of-the-ordinary jobs, is to point out the vital influence of this special experience on our regular products.

Yes, over the years we have been called upon to perform so many special forging operations that the unusual has, in a sense, become the usual here at Taylor Forge. And there is no better example of this than the *special* operations which contribute extra value to our *regular* line of WeldELLS and other Taylor Forge welding fittings.

Special steps are necessary to attain the uniform strength achieved in WeldELLS through proper distribution of extra metal where stresses are greatest. A special truing operation accounts for the extreme dimensional accuracy for which WeldELLS are so favorably known. Tangents, too, require a special process, and we could cite many more extra steps that go into the production of WeldELLS.

In fact, you will find that Taylor Forge "know-how" acquired in the tough school of experience is reflected in every one of the features of WeldELLS listed opposite. Check them over and we believe you will agree that . . .

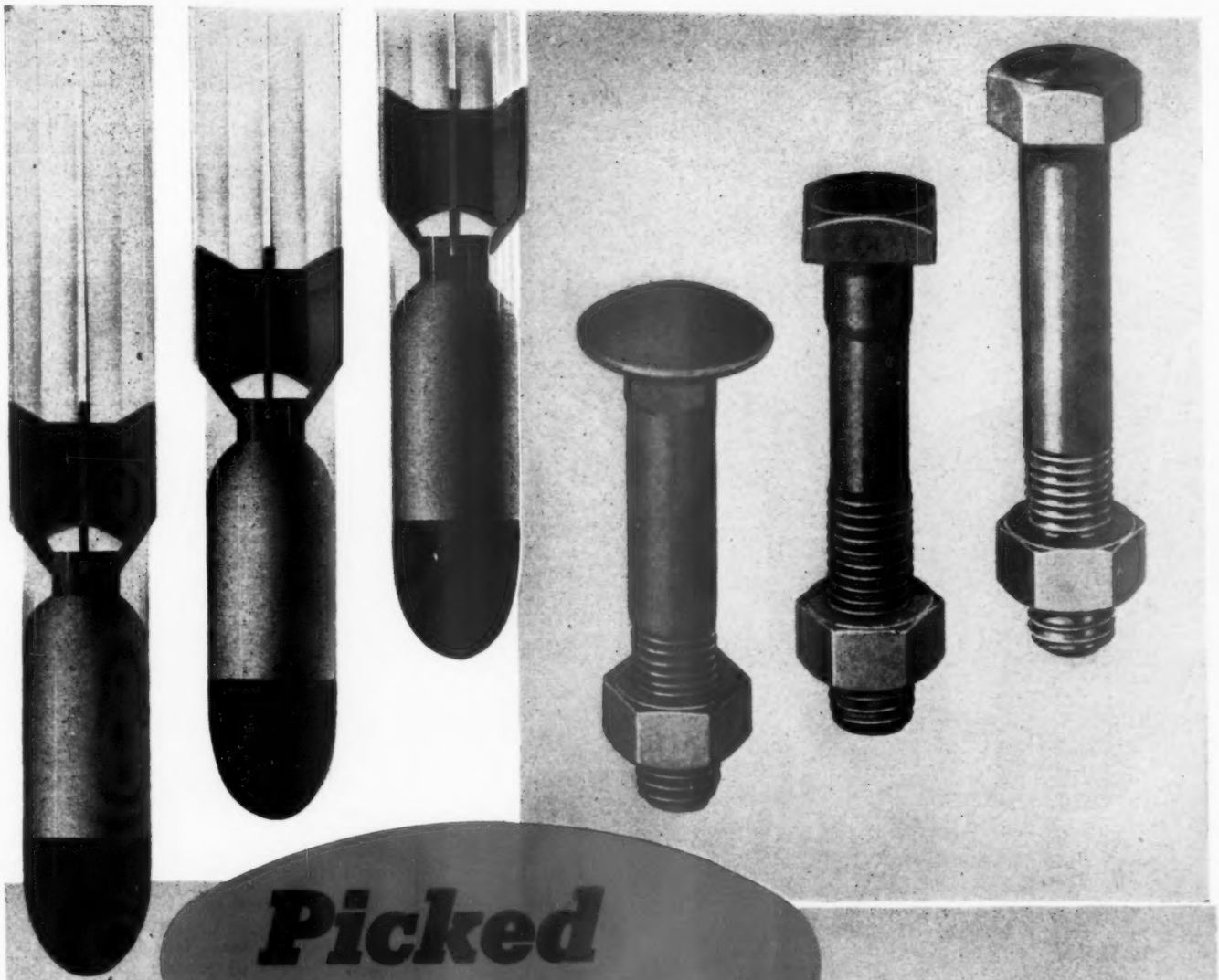
WeldELLS alone combine these features:

- **Seamless** — greater strength and uniformity.
- **Tangents**—keep weld away from zone of highest stress—simplify lining up.
- **Precision quarter-marked ends**—simplify layout and help insure accuracy.
- **Selective reinforcement** — provides uniform strength.
- **Permanent and complete identification marking**—saves time and eliminates errors in shop and field.
- **Wall thickness never less than specification minimum**—assures full strength and long life.
- **Machine tool beveled ends**—provides best welding surface and accurate bevel and land.
- **The most complete line of Welding Fittings and Forged Steel Flanges in the World** — insures complete service and undivided responsibility.



WeldELLS have everything

TAYLOR FORGE & PIPE WORKS, General Offices & Works: Chicago, P. O. Box 485
New York Office: 50 Church Street • Philadelphia Office: Broad Street Station Bldg.



Picked FOR THE JOB!

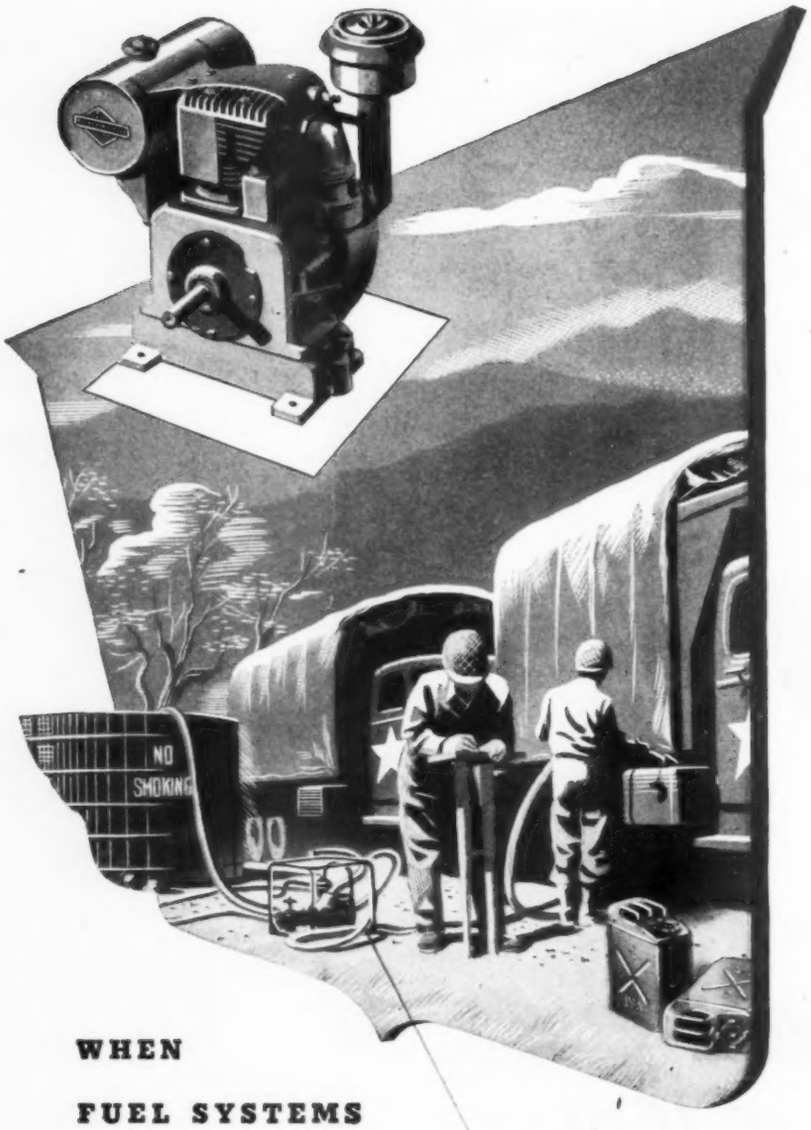
ON A BOMBING RAID it's the kind of a job that needs doing that determines whether block-buster, demolition, delayed action, incendiary or depth bombs are used . . each has its particular function . . each is built to fit a particular job.

So it is with Wasmer Tru-Fit bolts, cap and set screws, lag screws, etc. . . each is designed to fit the job . . each is precision made to assure a snug, shock-proof fit . . to assure speedy assembly . . to assure clean-cut, uniform, accurate threads, heads and shanks.

Whether used on battle equipment, on vital industrial machines, or for essential consumer production, Wasmer Tru-Fit Products are "built to fit the job"!

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WASMER
BOLT & SCREW CORP.



WHEN

FUEL SYSTEMS

NEED A *Stout "Heart"*

"Rush more gas!"—that's the cry from all fronts. To speed up pumping under all conditions, pumping units are powered by stout-hearted air-cooled gasoline engines — one more vital war application for dependable, instant-starting Briggs & Stratton engines.

Air-Cooled Power 4 CYCLE BRIGGS & STRATTON GASOLINE ENGINES

Manufacturers of all types of equipment requiring dependable, compact power units are invited to investigate the performance advantages of Briggs & Stratton engines. Their world-wide acceptance is backed by 25 years of leadership in design and precision manufacture—and the production of more than two million *air-cooled* gasoline engines. BRIGGS & STRATTON CORP., Milwaukee 1, Wis., U. S. A.

(*Continued from page 272*)

goal is production volume in machined forgings, castings, small stampings, special screw machine products and light assembly work. Plants at which manufacturing is to be carried on are Bowser, Inc., Fort Wayne and Angola, Ind., The Eagle Lock Co., Terryville, Conn. and Long Island, N. Y., The Fostoria Screw Co. at Fostoria and Tiffin, O., Bowser, Inc., Alhambra, Calif., and S. F. Bowser Co., Ltd., Toronto, Ont. J. C. Allen, Jr., has been appointed general sales manager of the Fostoria Screw Co., operating from the Detroit office.

The Weatherhead Co., Cleveland, O., has opened a direct Chicago sales office in the Pure Oil Building, Wacker Drive and Wabash Ave., in charge of Charles T. Craig, formerly Director of Purchases for the Company.

National Carbon Co., announces completion of its new sales set-up of seven divisional officers, with new headquarters in New York, Pittsburgh and Chicago. F. W. Berdan will manage the New York Division; J. A. Hammond the Pittsburgh Division; and H. A. Stewart the Chicago Division. Similar offices have been established at Atlanta, Dallas, Kansas City and San Francisco.

George Gorton Machine Co., Racine, Wis., announce the appointment of Russell, Holbrook & Henderson, Inc., 292 Madison Ave., New York, as exclusive representatives for the New England territory.

Kennametal Inc., Latrobe, Pa., has opened offices at Kansas City and St. Louis, Mo., the former in charge of Representative Ralph H. Craig, and the latter in charge of Representative Lyle H. Wade.

Square D Company, Detroit, Mich., announces the opening of a new manufacturing plant and warehouse at 310 Ranier Ave., Seattle, Wash., with Walter H. Bodle as manager.

Norton Co., Worcester, Mass., has acquired all design, manufacturing and sales rights for the Bura-Way Grinder, which henceforth will be known as Norton Bura-Way.

Progressive Welder Co., Detroit, has appointed M. K. Saunier as Chicago area representative, vice W. A. Stanley who returns to headquarters office.

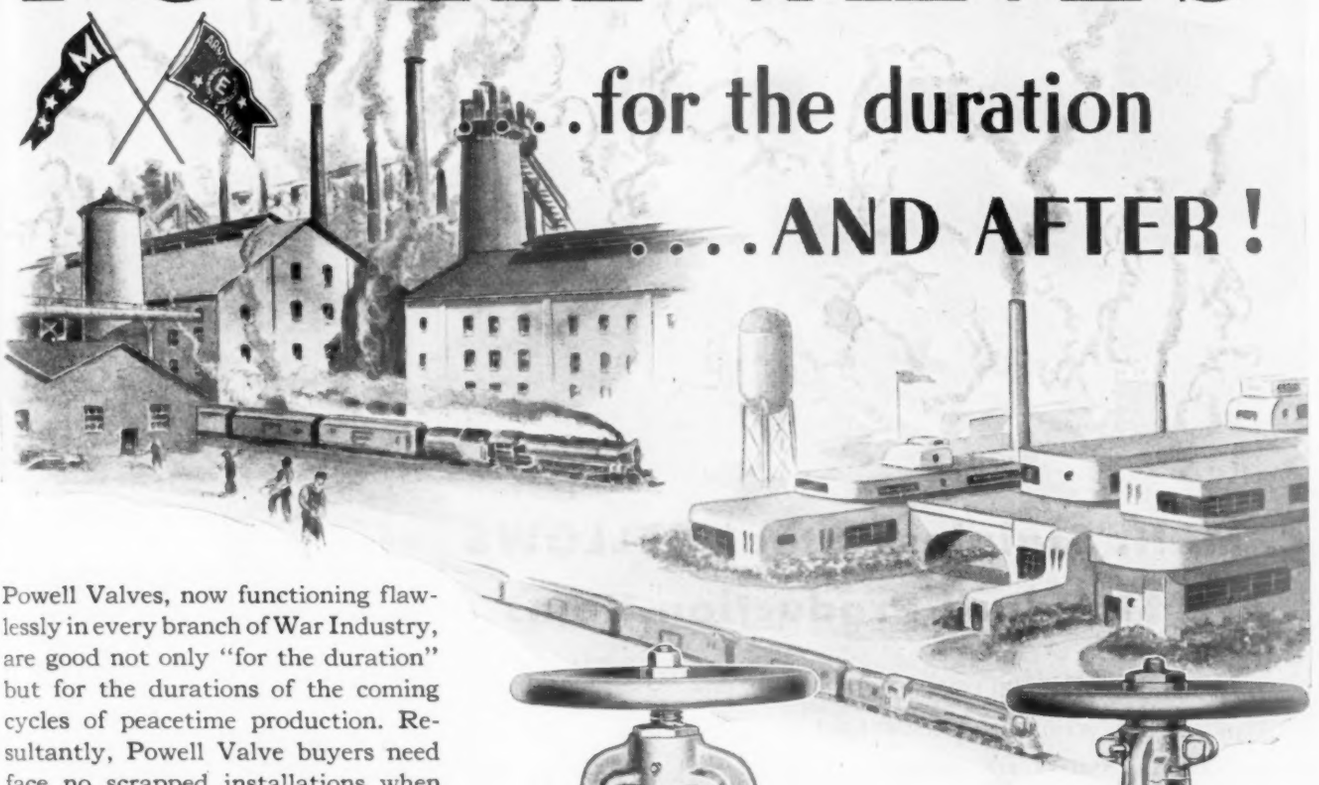
Chase Bag Co. announces that Henry C. Hancock, sales manager at New Orleans, has been transferred to Toledo, as sales manager.

Baldwin Locomotive Works has opened an eastern district office at 1152 Broad St., Station Building, Philadelphia, Pa., which will handle sales for all Baldwin divisions. J. D. Loftis is eastern district manager in charge.

POWELL VALVES

. . . for the duration

. . . . AND AFTER!



Powell Valves, now functioning flawlessly in every branch of War Industry, are good not only "for the duration" but for the durations of the coming cycles of peacetime production. Resultantly, Powell Valve buyers need face no scrapped installations when reconversion comes, whether it come by degrees or all at once.

The basic principle of efficient flow control is, at all times, the *right valve,* in the *right spot,* for the *right job.* It is on this principle that the complete POWELL Line of industrial valves of all types and materials has been developed through nearly a century of successful valve manufacture.

The Cast Steel Valves shown here are especially adapted for power plant service. The POWELL Line includes Steel Valves of all types for working pressures from 150 to 2500 pounds and Boiler Feed Line Valves for corresponding pressures.

The Wm. Powell Co.

Dependable Valves Since 1846

Cincinnati 22, Ohio

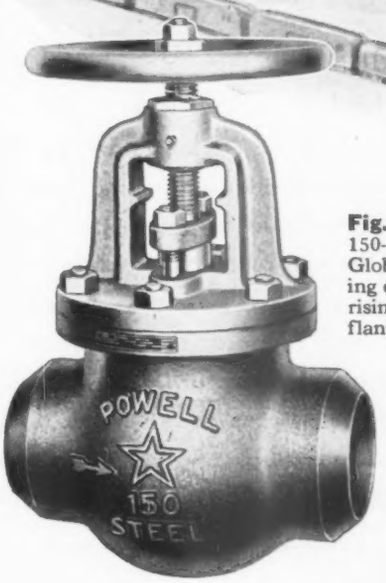


Fig. 1531 W.E.—Class 150-pound Cast Steel Globe Valve, with welding ends, outside screw rising stem and bolted flanged yoke.

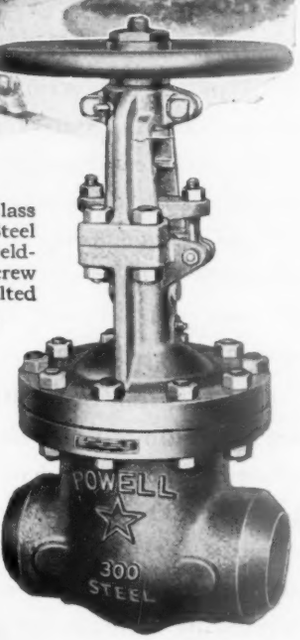


Fig. 3003 W. E.—Class 300-pound Cast Steel Gate Valve, with welding ends, outside screw rising stem, two-piece bolted flanged yoke and taper wedge solid disc.



Fig. 3061 W. E.—Class 300-pound Cast Steel Swing Check Valve, with welding ends and bolted cap. When wide open, this valve affords a full, straightway, unobstructed flow area through the body.

POWELL VALVES



C. M. H. Stainless Steel BELLOWS Are Standard Production Items

C. M. H. Stainless Steel BELLOWS are standard production products; hence, shipping delays are minimized. All the advantages of *Stainless Steel* have been utilized in the art and craftsmanship of C. M. H. BELLOWS. They are the solution to both difficult and urgent requirements.

C. M. H. Stainless Steel BELLOWS are corrosion resistant and operate efficiently at either high or low temperatures. They have the qualities required for handling high pressures—which may be further increased by multiple ply construction, where needed. Ferrous fittings attached by circular seam welding, give uni-metal assembly and assure non-corrosion of the assembled parts.

C. M. H. engineers and production will help you solve your immediate bellows problems—where they are to be required for valve stem housing on vacuum equipment, thermostats, pressure controls, valves, recording instruments, hydraulic mechanisms, rotating shaft seals, or other purposes. Write for complete information today.

Ask for Chicago Metal Hose Engineering Take-off Form SSB2 on which to submit your bellows requirements. It will save you time — assure more accurate, expeditious handling.

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MAYWOOD, ILLINOIS

Plants: Maywood and Elgin, Ill.

MERIT AWARDS ARMY — NAVY — MARINE



Four gold stars on U. S. M. C. "M" pennant at Bridgeport, Conn. plant of Jenkins Bros.

S. Blickman, Inc., Weehawken, N. J. White Star for Army-Navy "E" flag.

Westinghouse Electric and Manufacturing Company, Philadelphia, Pa. Steam Division and 30th Street Plant. Fourth White Star for Army-Navy "E" flag of each company.

The Edward Valve and Manufacturing Company, East Chicago, Ind. Fourth Gold Star for "M" pennant.

Delta Manufacturing Company, Milwaukee, Wis. Second White Star for its Army-Navy "E" award.

Westinghouse Electric and Manufacturing Company, Philadelphia, Pa. Merchant Marine plant. Second Gold Star added to its "M" pennant.

Brown Instrument Division of Minneapolis-Honeywell Regulator Company, "E" award for war production excellence.

Cleveland Lighting Division of Westinghouse Electric and Manufacturing Company. Army-Navy "E" pennant.

Acushnet Process Company, Boston, Mass. Third White Star for the Army-Navy banner.

W. H. Nichols and Sons, Waltham, Mass. Second renewal of Army-Navy "E" award.

Yale & Towne Manufacturing Company, Stamford Division, Conn. Army-Navy "E".

Jenkins Bros., Bridgeport, Conn. Fourth gold star for the United States Maritime Commission's "M" pennant.



At Yale & Towne Army-Navy "E" Presentation.

Top Quality calls for accurate threading.

You get fast-working Class 3 fit in CLEVELAND FASTENERS



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PRODUCT OF PAGE STEEL & WIRE DIVISION—AMERICAN CHAIN & CABLE COMPANY, INC., BRIDGEPORT, CONN.

NEW CALIFORNIA TOOL CO. ORGANIZED BY MICHIGAN TOOL MANUFACTURERS

Announcement of the organization of Demco Tool Service, Inc., with headquarters at 5236 San Fernando Road, Glendale, Calif., has been made jointly by a group of Detroit machine tool and cutting tool manufacturers.

The new organization is headed by Russell W. Luzius, for the past two years on the West Coast handling lines of cutting tools, and formerly Tool Engineer with General Motors Corporation. It will provide complete field engineering service on gear production, broaching, tapping, thread milling, and all forms of general machining including the use of both HSS and carbide cutting tools to assist Southern California Industry.

In addition, Demco is providing complete took reconditioning services and is also being equipped to handle job-broaching for West Coast manufacturers.

The companies represented by Demco include Michigan Tool Company, Colonial Broach Company, Detroit Tap & Tool Company, Tungsten Carbide Tool Company, Colonial Bushings, Inc., and New Method Steel Stamps, Inc., all of Detroit and Genesee Tool Company of Fenton, Michigan.

According to Mr. Luzius all standard tools manufactured by this group of companies will be carried in stock by Demco Tool Service, Inc.

DATA BOOK ISSUED BY SEAMLESS STEEL TUBE INSTITUTE

Seamless Tube Data Book, 320 pages, Loose-leaf binder, page size 8½″ x 11″, has been published by Seamless Steel Tube Institute, Pittsburgh 19, Pa. The price is $2.50. The book is divided into four principal sections with guide index covering General Data, Mechanical Tubing, Pressure Tubing and Reference Tables.

Under General Data—there is a brief summary on the history, manufacture, tests, special shapes and standard steels with chemical composition, mill practices, etc.

The section on Mechanical Tubing covers information on typical uses, suggestions of how to obtain best results through the use of tubing, determining proper size, with complete tolerance tables, properties for beams, and a digest of standard specifications.

The section on Pressure Tubing covers various pressure formulae, specifications and tolerance tables for boiler tubes, heat exchanger and condenser tubing, still tubes, alloy steel pipe, stainless steel analyses, with metallurgical data.

The Reference Table section is unusually extensive with many formulae, weight tables for rounds, squares, rectangles, surface areas both inside and outside, and other tables commonly found useful in tubing applications.

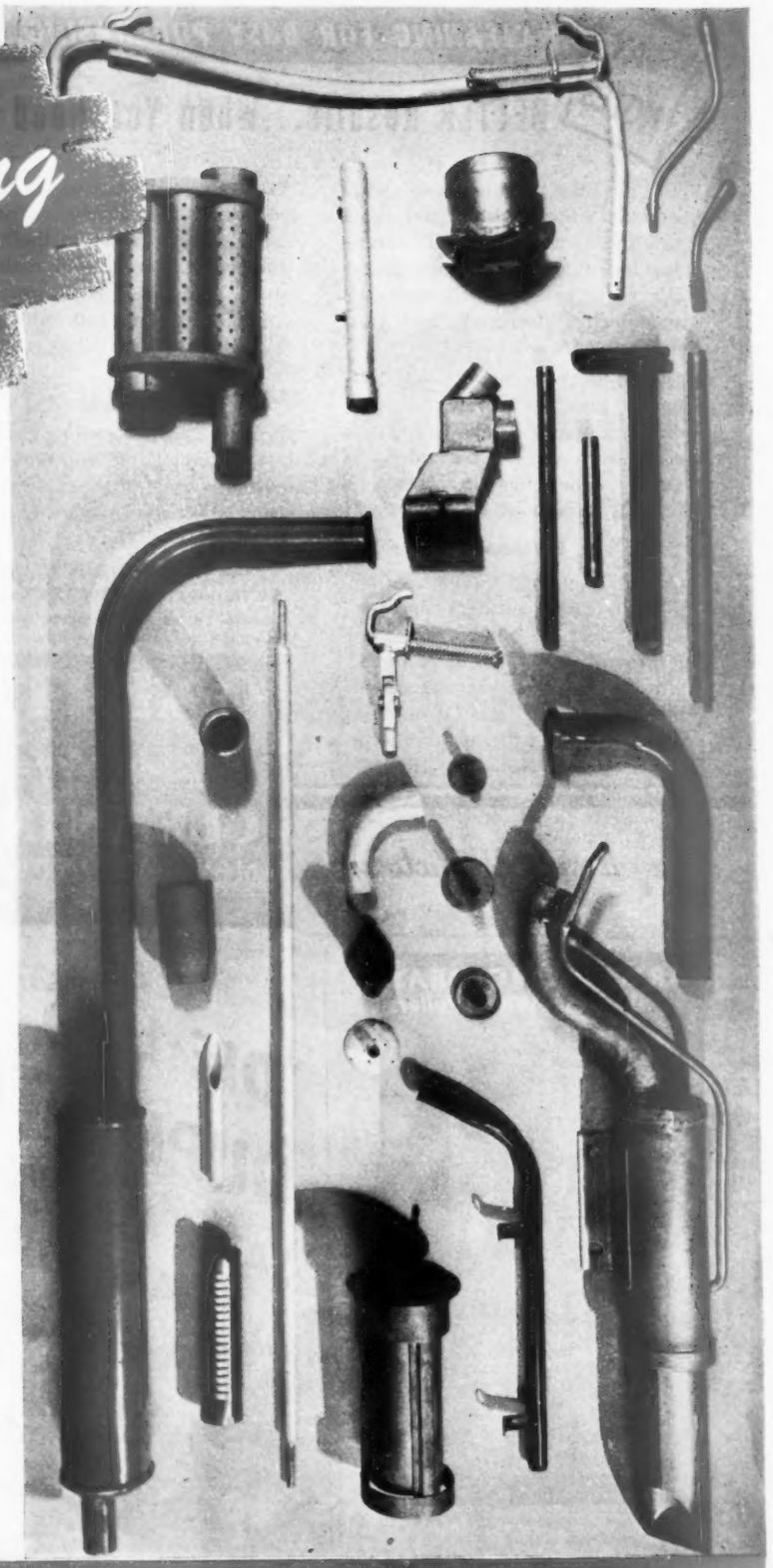
This is the most complete volume on this subject issued for many years. Supplementary sheets with new data will be supplied from time to time.

A FEW TYPICAL

Metal Tubing

AND STAMPING

Assemblies



Fabricated by Us for Other Manufacturers

This picture shows only a few of many different kinds of metal tubing and stamping assemblies—fabricated by Noblitt-Sparks—to go into the products of other manufacturers. But this may suggest something that our company might make for your company—now or later—to your advantage as well as ours.

Noblitt-Sparks makes and forms metal tubing into any shape—welds it to other parts stamped from metal — assembles, plates or paints the entire unit—ready to go into your product.

With 11 plants and 25 years of experience in manufacturing, Noblitt-Sparks may have exactly what you need in engineering assistance and production facilities. When you have a specific job in mind, write or call . . .

Harlan Faulkner

Vice-President and Director of Manufacturer's Parts Division

NOBLITT-SPARKS INDUSTRIES, INC. • COLUMBUS, IND.

NOBLITT-SPARKS

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FABRICATORS OF METAL TUBING AND STAMPING ASSEMBLIES TO MEET YOUR NEEDS

V-DAY NOTES ON CLEANING FOR BUSY PURCHASING AGENTS

BETTER Results...When You Need Them!

To get the results you want quickly, thoroughly, and with safety . . . use the RIGHT cleaning technique! Meet your cleaning requirements with materials specifically designed for your product and work.

Oakite performance-proved materials provide a wide range of cleaning and related compounds of uniform quality, backed by 35 years' experience in America's leading industries.

FREE Personal Service

Oakite Technical Service brings to plant, mill or shop the personal, practical help of our local Representative. It is his responsibility to see that you secure all the advantages and economies that result from the use of Oakite materials and methods.

Thousands of concerns will tell you this dependable service is today's best answer to their production, sanitation and maintenance problems. And we will appreciate the opportunity to serve you in the same successful way.

Inquiries Invited

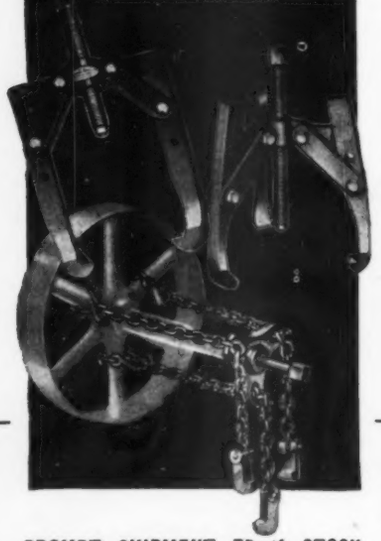
If you have a cleaning problem, large or small, and you have been unable to find the complete answer, shift the responsibility to our shoulders. We can help you!

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Technical Service Representatives Located in All Principal Cities of the United States and Canada

OAKITE *Specialized* CLEANING
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because they save hours of time, prevent costly breakage and long shut downs.
STEELGRIP Standard Rigid Arm Gear and Wheel Pullers are of improved design. Will not slip from work. Arms are forged and heat-treated. 2-arm. 3-arm and special models. 12 types and sizes.
CHAINGRIP Universal Pullers pull wheels, solid gears, pinions etc., even at considerable distance from end of shaft. Proof-tested chains have both chain hooks and special pulley hooks. 3-ton and 12-ton capacities.

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SAVES MAN POWER AND DELAYS!
DIE ACCURACY WITHOUT DIES
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O'NEIL-IRWIN MFG. Co. DI-ACRO PRECISION MACHINES DIE-LESS DUPLICATING
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PITTSBURGH PLATE EXPANDS FACILITIES

H. B. Higgins, President, Pittsburgh Plate Glass Company, has announced plans for a $330,000 addition to the Company's production facilities at their Creighton, Pennsylvania, plant, already one of the world's largest plants for the production of polished plate glass, laminated glass products, and glazed assemblies for aircraft. This addition will even further increase its capacity for the production and assembly of aircraft turrets, blisters, noses and canopies.

The new building will be 108 by 180 feet, and its construction has been approved by WPB. It will be located between the plate glass plant and laminating and assembly plants, on ground already owned by the Company.

G.E. TO MAKE SYRACUSE ELECTRONICS HEADQUARTERS

General Electric Company has acquired a 155-acre plot of ground in Liverpool, N. Y., (5 miles from Syracuse) and plans, when necessary materials are released by the government, to build a new plant and make it the headquarters for the company's electronics Department. Preliminary plans call for the erection of several buildings finely landscaped. It has been suggested that the plant be called "Electronics Park." General Electric's electronics department activities are under the direction of Dr. W. R. G. E. Baker, vice president.

PRESSURES FOR WELDING FITTINGS NEW TUBE TURNS BOOKLET

A 20-page booklet has been issued by Tube Turns, Inc., Louisville, Ky., giving allowable working pressures for welding fittings in five classes of piping—power oil, district heating, gas and air, and refrigeration. Fourteen convenient tables list allowable pressures at the indicated temperatures for any size and weight Tube-Turn fitting. All tabulations are made in accordance with the Code for Pressure Piping A.S.A. B31.1—1942.

HUGE RUBBER BELT

A rubber belt with steel-cable carcass which can be loaded to roughly seven times the tension of the heaviest belt ever made before, has been made for use with a machine at Wright Field for testing airplane tires and brakes, by Goodyear. When looped the belt can withstand a pull of more than half a million pounds. There are 600 steel cables laid parallel over the belt's width, each consisting of seven strands which in turn consist of another seven brass plated steel wires. The belt includes 750 lbs. of cotton in six plies of fabric which house the steel cables between exterior sheaths of synthetic rubber. The belt weighs 2,730 pounds.

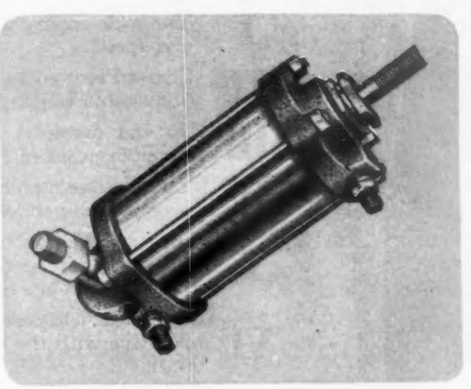


Air, controlled and at work puts the "sock" in a windsock. Compressed air, Schrader-controlled, puts a "sock" into industrial operations, makes shorter, easier, safer work of them.

Schrader Air Controls cut costs, save time and labor by reducing or eliminating tiring and hazardous muscular operations. Using thrifty controlled intermittent air blasts instead of wasteful continuous flow, Schrader controls also enable you to enjoy the advantages of Schrader devices without—in many cases—adding to your existing compressor capacity.

The first cost of Schrader Air Controls and devices is so small and the return on the investment so consistently high that you can hardly afford to risk a return to reconversion production schedules and costs without serious consideration of them.

A highly practical example of Schrader air devices is the Schrader Air Cylinder, an air "muscle" with a thousand uses. Schrader Air Cylinders do tough, tiring, lifting, lowering, pushing or pulling jobs better, faster and cheaper than they can be done manually.



THERE ARE HUNDREDS OF USES for Schrader Air Cylinders. Cost very little. Easy to install and operate with Schrader Control Valves. Many types, single or double-acting, and in a variety of lengths, diameters and mountings for every purpose.

Send for the new Air Cylinder Bulletin A-8-P and see the many Cylinders, Operating Valves, etc., you can use to save the time and energy of your workers.

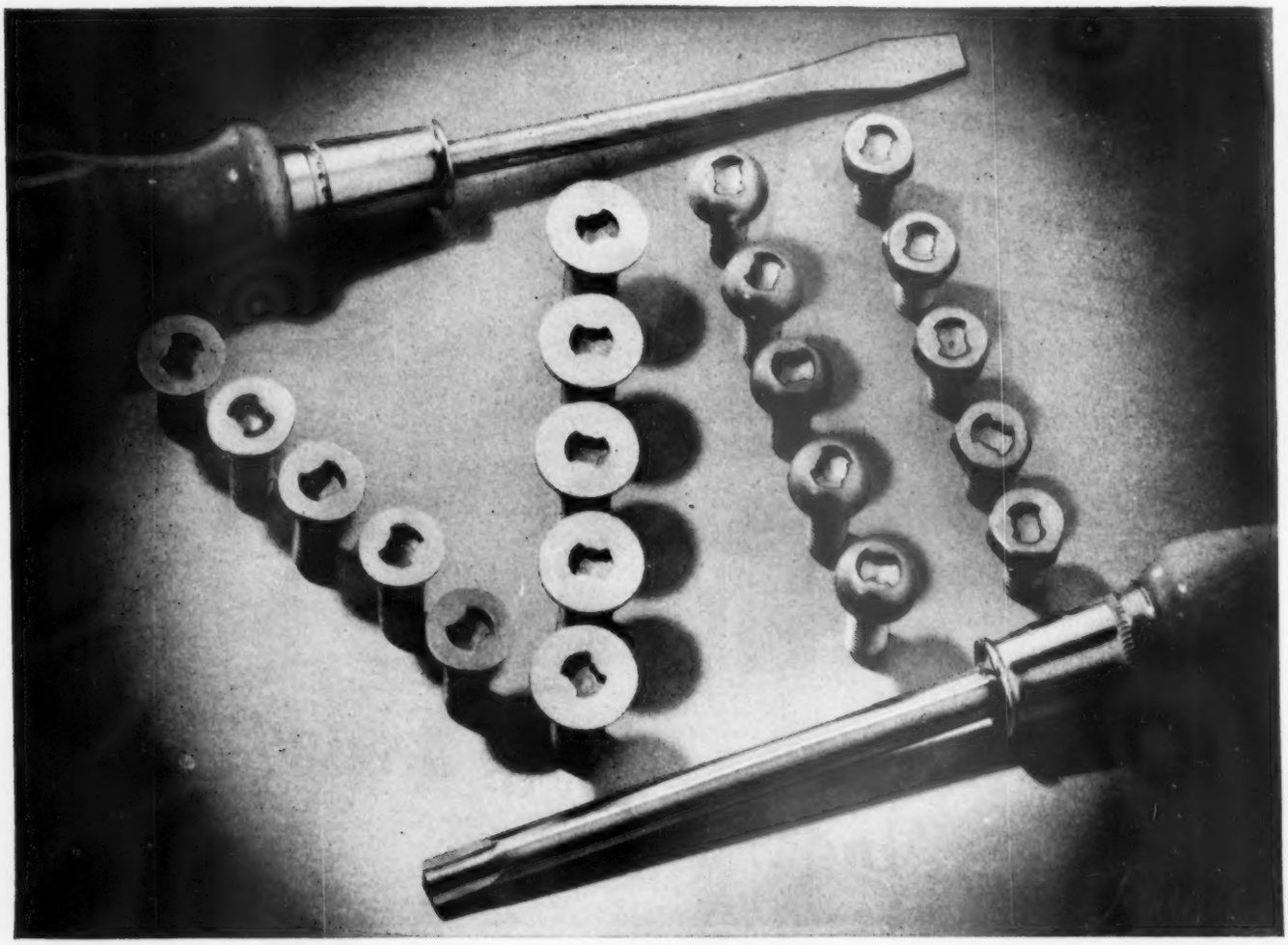


Air Valves 2, 3, 4-way • Blow Guns • Machine Operating Air Controls • Quick-acting Couplers • Safety Operating Controls • Air Ejection Sets • Hydraulic Gauges

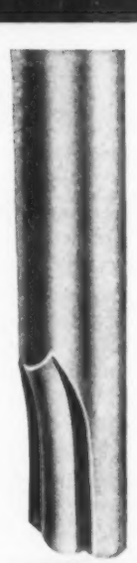
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REG. U.S. PAT. OFF.
CONTROLS THE AIR

MADE BY THE MAKERS OF SCHRADER TIRE VALVES AND GAUGES

A. SCHRADER'S SON, ***Division of Scovill Manufacturing Company, Incorporated,*** **BROOKLYN, NEW YORK**







Seven Major Features

have established CLUTCH HEAD as the most modern screw on the market . . . for safer, speedier production and lower final cost.

I The wide roomy Clutch, an easy-to-hit target, inviting operator confidence and speed.

II Center Pivot entry to prevent canting; deep positive engagement for protection against slippage . . . safeguarding manpower and materials.

III No end pressure. The straight-walled Clutch matched by straight-sided driver disposes of "ride-out" tendency as set up by "tapered" drive home.

IV CLUTCH HEAD'S exclusive Lock-On unites screw and bit as a unit . . . substituting easy one-handed reaching for fumbling with mechanical fingers.

V The rugged Type "A" Bit delivers a longer uninterrupted spell of service . . . and may be repeatedly reconditioned to original efficiency by a 60-second application of the end surface to a grinding wheel.

VI Simplified field service . . . because CLUTCH HEAD is the only modern screw operative with the ordinary type screwdriver, *or any flat blade*, of proper width.

VII Here again the CLUTCH HEAD Lock-On saves the day. With the Type "A" Bit, rusted-in and frozen-in screws may be withdrawn undamaged and held secure against dropping for re-use.





Because CLUTCH HEAD *is "The Screw That Sells Itself," we invite you to personally examine and test these features. Your request will bring you, BY MAIL, a package assortment of* CLUTCH HEAD *Screws and sample Type "A" Bit; also fully illustrated Brochure.*

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South Bend—Edwards Iron Works, Inc.

IOWA
Des Moines—Delevan Engineering Co.

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Greenville—Edward McCrady

TENNESSEE
Bristol—J. G. Tilley
Memphis—Pidgeon-Thomas Iron Works

TEXAS
Houston—James A. Hall

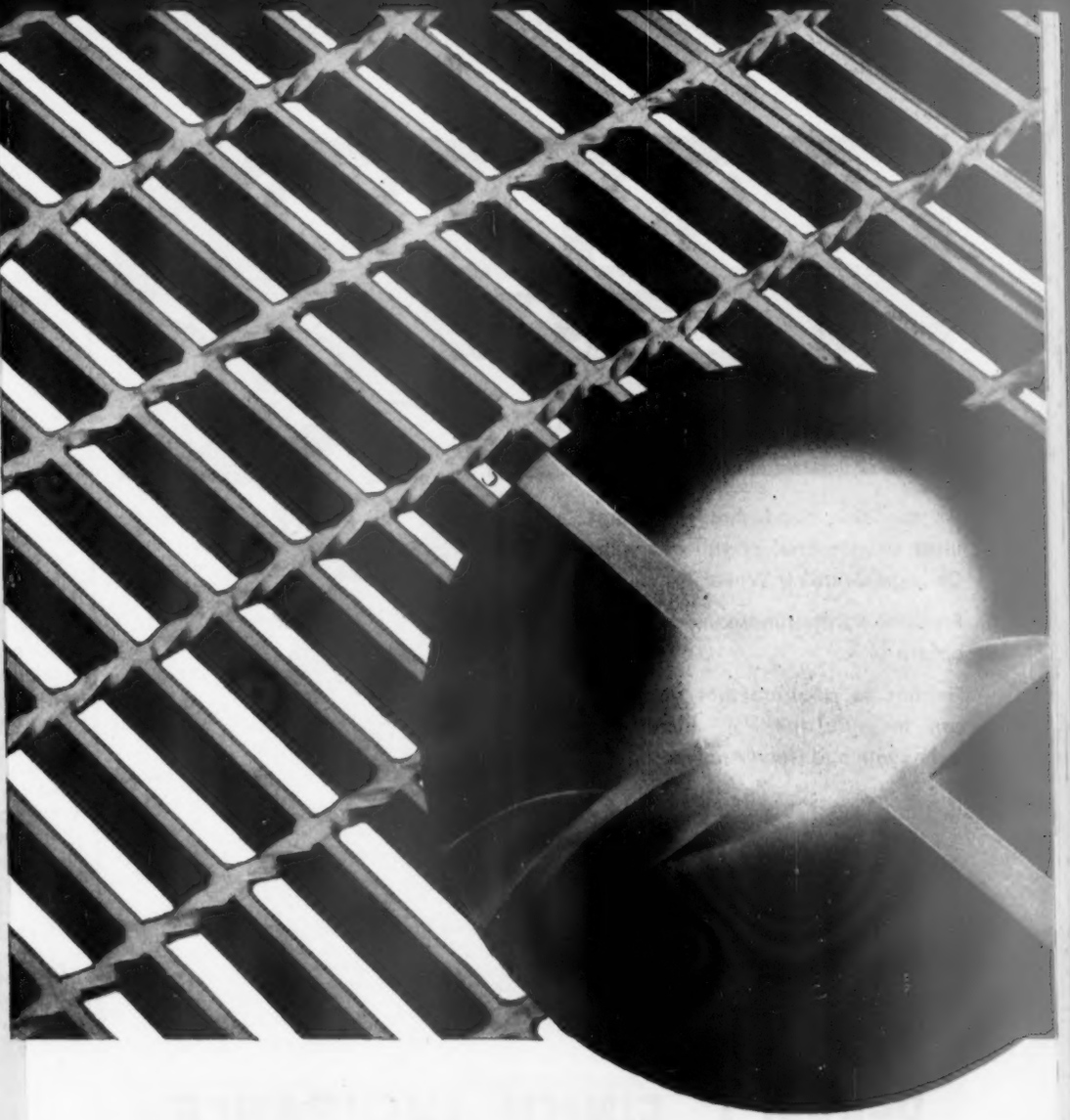
UTAH
Salt Lake City—Harrison & Co.

VIRGINIA
Richmond—W. H. Trausneck
Roanoke—Milliken Co.

WASHINGTON
Seattle—Geo. Montgomery

WEST VIRGINIA
Charleston—Fireproof Products Co.
Clarksburg—A. H. McMunn
Fairmont—Fairmont Mining Mach. Co.

WISCONSIN
Milwaukee—Hunter Tractor & Machinery Co.



No Overhead Under-Foot

BLAW-KNOX ELECTROFORGED GRATING

has proven itself to be a "one time" investment. With the exception of an occasional painting, there is no overhead for repair or replacement to this solid, one-piece grating. It's better 5 ways . . .

1 — Self-cleaning, no sharp corners to clog
2 — Maximum open area for light and air
3 — Easy to maintain — paint reaches entire surface
4 — Strong electroforged construction means easy erection
5 — Safe footing at all times with twisted cross bar

A Catalogue and paper weight size sample will be sent upon request made on a firm letterhead.

There's a Blaw-Knox Dealer Near You

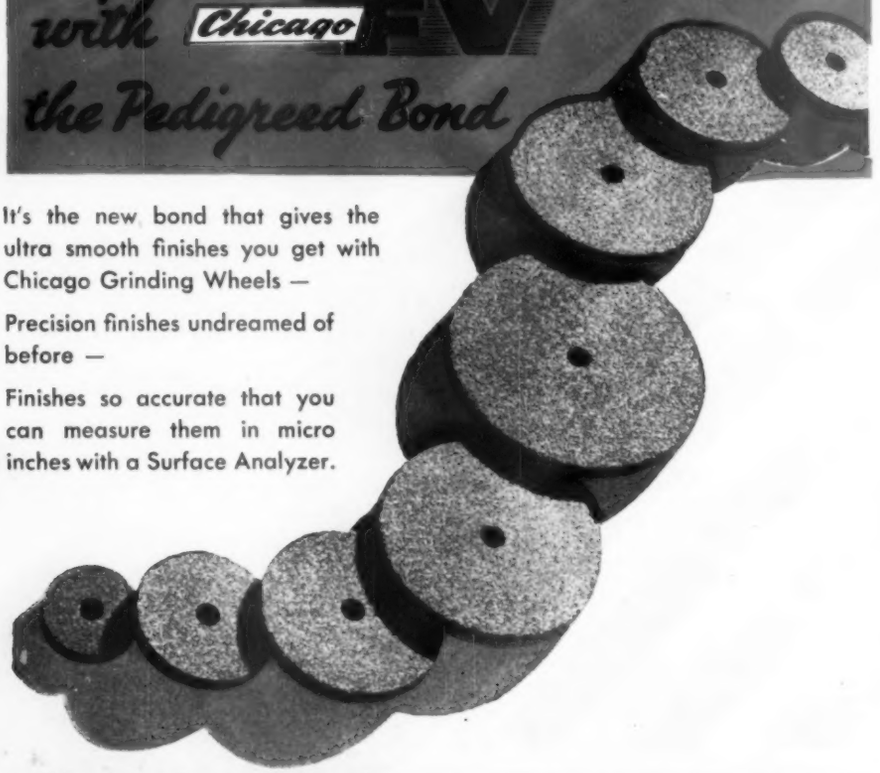
ARMY E NAVY

BLAW-KNOX

BLAW-KNOX DIVISION
OF BLAW-KNOX COMPANY
2075 Farmers Bank Bldg., Pittsburgh, Pa.
NEW YORK · CHICAGO · PHILADELPHIA
BIRMINGHAM · WASHINGTON
Representatives in Principal Cities

BONDED

with Chicago FV *the Pedigreed Bond*



It's the new bond that gives the ultra smooth finishes you get with Chicago Grinding Wheels —

Precision finishes undreamed of before —

Finishes so accurate that you can measure them in micro inches with a Surface Analyzer.

PERFECT FINISH INSURANCE

Whatever you have to finish — metals, alloys, plastics, wood, laminates or composition materials — you can do it better with Chicago Wheels.

Chicago Wheels have kept pace with the precision requirements of our war industries, and you can use them with confidence to finish civilian goods better in double quick time.

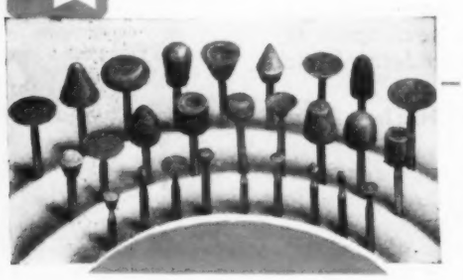
CHICAGO GRINDING WHEELS

A wide range of grains and grades and — for the duration — sizes up to 3″ in diameter.

TRY ONE FREE — We'll send without charge a Mounted Wheel or an FV Bond Grinding Wheel. Tell us size you'd like.

CHICAGO MOUNTED WHEELS

The first made and the finest today. In a selection of bonds, abrasives and shapes to handle each job more efficiently.



Write for Catalog listing all Chicago products and showing comparative photographs of finishes with different kinds of Wheels.

CHICAGO WHEEL & MFG. CO.
Headquarters for Mounted Wheels and Small Grinding Wheels
1101 W. Monroe St., Dept. PG, Chicago 7, Ill.

* Half a Century of Specialization has established our Reputation as the Small Wheel People of the Abrasive Industry.

PG10

Send Catalog. Interested in

☐ Mounted Wheels. ☐ Grinding Wheels.

☐ Send Test Wheel. Size .....

Name .....

Address .....

TREASURY PROCUREMENT DISPOSES OF SURPLUS CONSUMER GOODS

The Treasury Procurement Division disposed of surplus consumer goods in July appraised at $9,000,000 for $7,600,000, realizing 84.5 per cent of appraisal. Among the larger categories were sales of used Army trucks appraised at $6,254,000, furniture and fixtures, $360,000; fabricated textile products (mostly mosquito nets, bars and comforters) $650,000; and leather products, consisting principally of sheep shearlings, $845,000.

Thus far, more than 23,000 trucks have been declared to the Treasury Procurement Division, and 30,000 more are expected soon. Generally, trucks have been disposed of quickly after being inspected and listed for disposal. Dispositions have been large compared with recent acquisitions. These quick sales have been made largely to farmers who need trucks to save their crops. Distribution of trucks geographically has been made according to information obtained from the Office of Defense Transportation indicating those areas most critically in need of truck transportation. Sales have been made in such areas through hundreds of dealers. For example, in the Boston region, 850 trucks were distributed through 125 dealers; in the New York region, 2,300 trucks went to more than 600 dealers, and in Texas 2,041 trucks went to 500 dealers. An effort has been made to limit sales to not more than five trucks per dealer, although special circumstances sometimes have made it advisable to vary this.

* * *

Spending and Saving

(*Continued from page* 114)

market quotations on meats in a given locality, over a period of years; by taking alternative bids for one-month and three-month periods; by a questionnaire to the trade, inquiring as to past statistics and experience; and by analysis of bid-opening statistics over a period of years. The State of New York, which purchases more than fifteen million pounds of meat annually at normal expenditure of approximately one and a half million dollars, has found it advisable to limit the term of contracts for meat to thirty days.

For reasons more or less analogous to those appertaining to meats, a short term contract on purchases of flour also seems advisable, except that here purchases should be combined to cover car-lot delivery whenever feasible. On less than car-lot quantities the buying should be alternated from month to month. The saving made through buying car-lot delivery quantities will more than offset any usual market fluctuations.

(*Continued on page* 288)

If you need FENCE *Call* ANCHOR

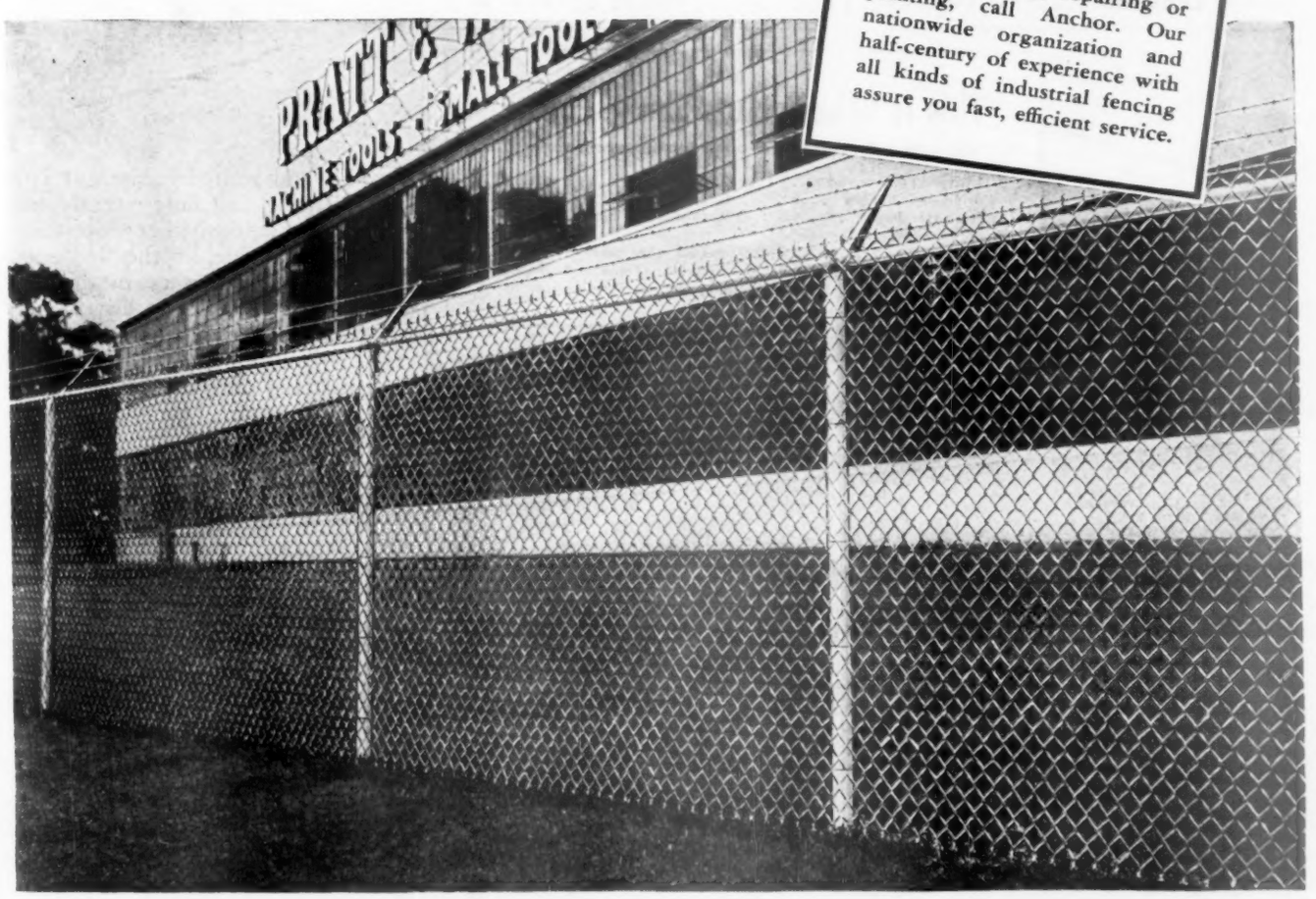
IF you have a fence problem, call Anchor. A trained Anchor Fence Engineer, backed by our 52 years of fencing experience, will help you analyze your particular situation and how to meet it . . . make you an estimate at no obligation to you. Anchor's 16 branch offices provide speedy nationwide service. Anchor's expert skill assures you the *best* fencing that is available under wartime conditions.

So write at once for our Free Industrial Fence Catalog and the name of your nearest Anchor Fence Engineer. Ask for a free consultation. Anchor's fencing experience can save you time, inconvenience and money. Anchor Post Fence Company, 6615 Eastern Avenue, Baltimore 24, Maryland.

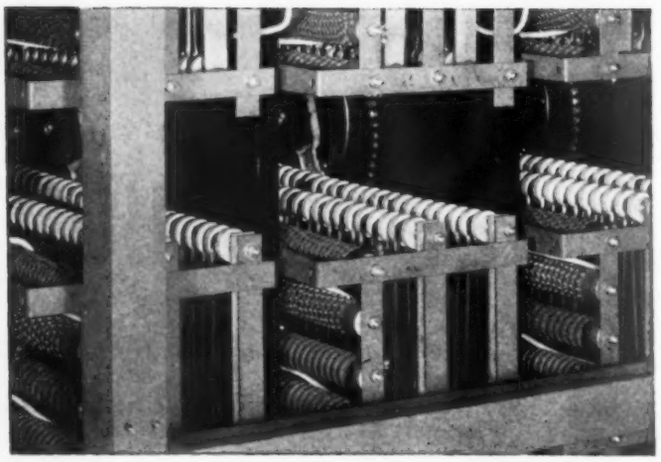
ANCHOR FENCE

Service Available

If you want your present fence moved to a new location, or if it needs realigning, repairing or painting, call Anchor. Our nationwide organization and half-century of experience with all kinds of industrial fencing assure you fast, efficient service.



★ ★ ★ ON ANY FENCING PROBLEM CALL ANCHOR ★ ★ ★



ADAPTABLE and DEPENDABLE RESISTORS

Adaptability and dependability of resistors assume primary importance in the assembly of large rheostat control units. The wide range of resistance values and capacities that can be built up from the Ward Leonard line is limitless. The many types and mounting arrangements permit the meeting of load requirements in minimum space. Whatever your requirements you will find a Ward Leonard Resistor that exactly meets your conditions. Send for Bulletins.

WARD LEONARD

RELAYS • RESISTORS • RHEOSTATS

Electric control (WL) devices since 1892.

WARD LEONARD ELECTRIC COMPANY, 50 SOUTH ST., MOUNT VERNON, N. Y.



"This is Where Nuts Shake Loose,"

*say over a thousand fleet operators in recent survey**

1. Universal Joints and drive shaft flanges	59.4%	7. Wheels	36.2%
2. Rear axle flanges	56.5	8. Backing Plate to Axles	23.0
3. Spring clips	54.3	9. Clutch and brake	13.7
4. Bumpers	49.5		
5. Body bolts	45.0		
6. Engine supports	39.0		

and 52 other parts of the truck assembly, as well as 24 places in supplementary equipment.

1,160 Fleet Supervisors put their finger on the LOOSE NUT MENACE!

Long life and high use are vital factors to fleet operators. To solve the loose nut menace, they call for an all-metal, one-piece nut—the nut that *can't shake loose.*

In the No. 1 danger spot named above, Boots Self-Locking Nuts held fast through 12 months testing of hard-driving wear and tear. With its built in steel lock, the all-metal Boots Nut grips tight. Can be used again and again. Unaffected by water, oil, chemicals.

The ALL-METAL LOCK is Built-in Here



***OPERATORS OF 110,000 MOTOR VEHICLES** say that a vibration-proof nut like this would save tens of thousands of dollars in service costs.

BOOTS SELF-LOCKING NUTS

"There's No Excuse for a Nut Shaking Loose"

Boots Aircraft Nut Corp. • General Offices, New Canaan, Conn.

Representatives in New York • Chicago • Detroit • Indianapolis • Los Angeles • Kansas City • Dallas • Toronto • Montreal • Vancouver

Spending and Saving

(*Continued from page* 286)

Assuming that estimated quantities should be the basis of contracts, some commodities such as furniture, machinery, mechanical equipment, and other groups of items do not lend themselves to long term contracts. That situation, however, does not preclude the possibility of definitely scheduling periodic requirements to avoid the expense of repeated bid openings for similar items.

The purchase of household furnishings and replacements should normally precede housecleaning time, but a change-over of residents or the equipment of new buildings might require the scheduling of one or two additional bid openings through the year. Barring emergencies, the natural time for the purchase of road-building machinery,



trucks, and related equipment is in early spring and fall; yet, depending on the date when appropriations become available, another bid opening may be necessary in midsummer. It is impossible to discuss here the contract period of all commodities. The lessons to be learned are that the purchase of each commodity or group of commodities presents a specific problem capable of solution on a common-sense basis, and that all contract and purchase schedules must conform to actual needs.

Quantities

The purchasing officer has control of quantities through the power to review and revise requisitions. He should chart the maximum and minimum needs of each state agency and the time of need, fixing the mean as an all-time inventory level for each commodity, plus a safety percentage. Of course, provision should be made for decreases or overages at seasonal or peak periods. Within these figures, periodic

(*Continued on page* 290)



FOR over 60 years, America's railroads have specified and used Standard Shield Brand Drills, Reamers, Taps, Dies, and Cutting Tools. Today the railroads are among our largest customers.

Standard Shield Brand Tools are purchased by the tens of thousand for the repair, maintenance and construction of that equipment with which the railroads are doing the world's greatest transportation job.

On the basis of this record, we invite you to send us your tough jobs. Chances are our engineers can select from our stock of thousands of tools a drill, reamer, tap or cutter of the type that will reduce costs and speed production in your shop. No obligation, write to

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RIEGEL
WORK GLOVES

These strong, protective work gloves are the product of one of America's largest textile mills. They are Riegel-controlled—in one plant—from raw cotton to finished glove. This single close supervision of every detail results in unexcelled quality—durability—economy. Sold by Leading Wholesalers.

"The Right Glove Riegel *For Every Job"*

RIEGEL TEXTILE CORPORATION

342 Madison Avenue, New York 17, N. Y.

Spending and Saving

(*Continued from page* 288)

requisitions or estimates of state agencies for supplies and equipment should be revised, these statistics should be correlated with market trends, and total quantities combined or divided for contract purposes.

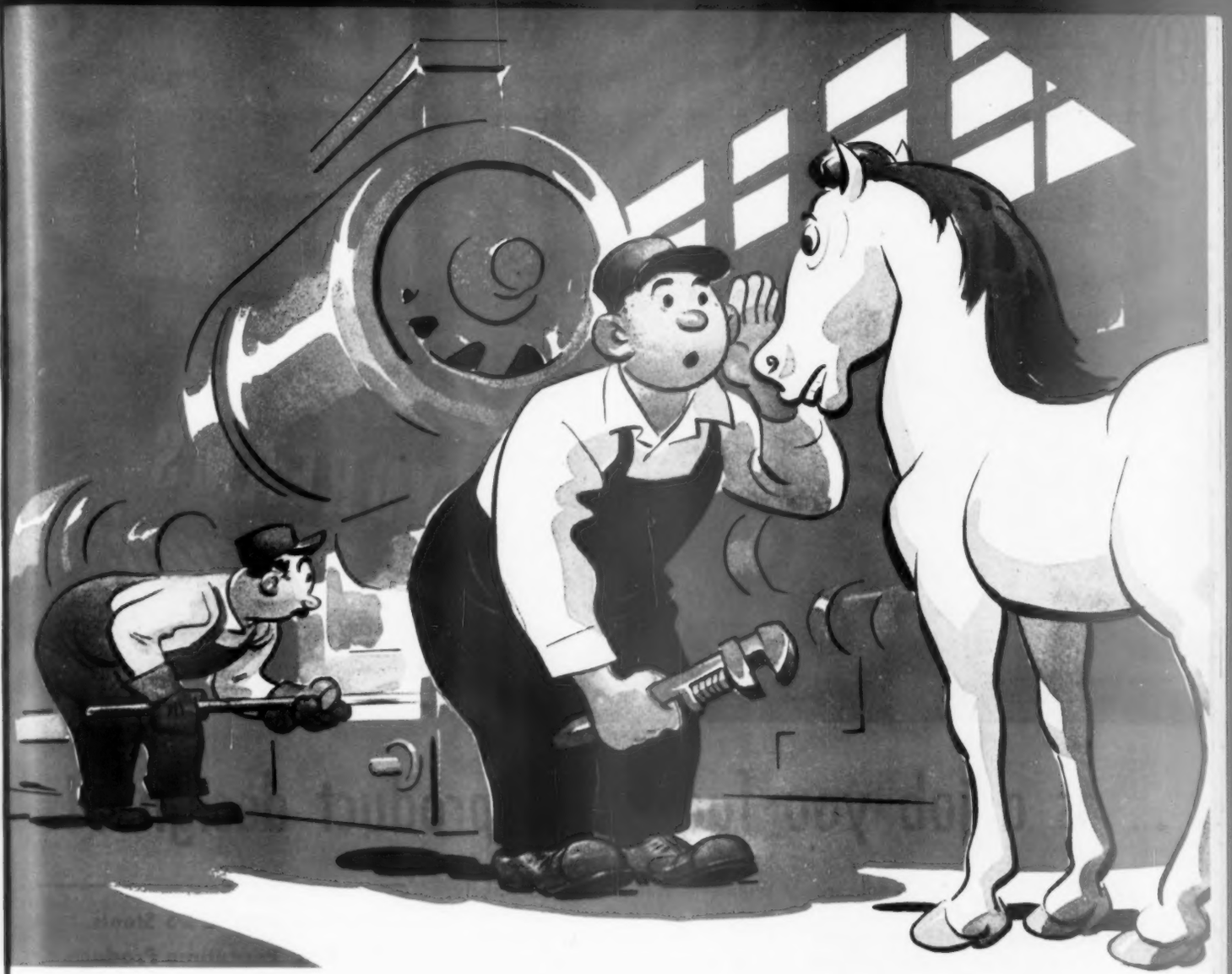
Quantities should be stated as definitely as possible in both the proposal and award schedules, although there may be a variation between the two. Requisitions are made up considerably in advance of purchases, in governmental buying, and changes in quantities are sometimes necessary before the final award of the contract. Many factors may contribute to this situation —unordered balances on previous contracts, lack of available funds, increases in market prices, unexpected changes in institutional population, etc. Definite quantities should therefore not be "frozen" into proposals as a means of effecting administrative efficiency. Rather, they should be reasonably flexible, so that necessary changes can be made prior to the award, by mutual consent of the successful bidder and of the purchaser.

Lowering of Quantities

There can be no charge of discrimination in following this procedure. The interests of other bidders are not prejudiced if quantities are lowered; the prospective contractor is protected by the mutual consent option; and the state retains its right to reject all bids and readvertise if the bidder refuses to consent to necessary quantity revisions. In actual practice, little difficulty develops because of such procedure.

The quantities listed in the contract award should be definite, usually within a 10 per cent tolerance, in fairness to both the state and the contractor. The state, however, should reserve the right to reassign quantities between agencies within the stated totals, subject to adjustment of prepaid transportation charges. In the event that an overage in excess of 10 per cent subsequently develops, the commodity can be readvertised, whether or not the contract period has expired, since the contract will terminate automatically with the delivery of 110 per cent of the specified quantity. In that event, instead of utilizing the entire mailing list, competition may be limited to the original bidders if this is deemed advisable. But if

(*Continued on page* 294)



Don't Be Fussin' and Fixin'— Get Horsepower by Howell



The Howell Protected Type Motor, shown, gives complete protection against dripping liquids, metal chips and other falling particles. Completely streamlined — utilizing non-breakable steel frame — malleable or steel base — cast iron end plates and cast iron, weatherproof terminal box are standard construction features. Special horizontal and vertical mountings are available.

Available in sizes 5 H.P. and smaller.

REPAIR MAN: I'd like to wrap this wrench around the guy's neck who insulated this motor.

HORSE: I know how you feel about sloppy work.

REPAIR MAN: Here we are at the peak of production, and what happens? Motor failure . . . tear down the machine . . . lose time . . . get behind — all because the motor wasn't built right in the first place.

HORSE: My good man, stop worrying! Use Howell Motors. The entire stator of every Howell Motor is triple-treated with Howell Bond varnish. It is made to withstand temperatures up to 350° F.— is water and oil proof and grease resisting, and it will not break or crack. The rotors are copper, too, and the best grade bronze or ball bearings are used. You just can't buy better motors.

REPAIR MAN: That's right! I know it! I'm specifyin' HOWELL for all my new jobs.

Phone the nearest Howell representative today, or write direct to the factory for prices, data and delivery dates on Howell standard or specialized motors for every industry, up to 150 Hp.

HOWELL ELECTRIC MOTORS COMPANY

HOWELL, MICHIGAN

Manufacturers of Quality Motors Since 1915



. . . is a job you face as a product designer!

FROM all indications, people are doing a lot of daydreaming about the kind of world this will be after V-Day. They vision a brand new world filled with amazing devices—utterly different from the world we know today—in everything from homes to equipment, machines and gadgets.

Of course, many products will undergo a change for the better and many new ones will be added. But to expect a completely radical and instantaneous departure from the proven and time-tried is neither realistic nor practical. This is particularly true in respect to those basic materials which have kept in step with progress.

Steel is an excellent example. Its advances due to war's exacting demands have been many and important. Steel processing has improved and new steels have been developed. Now, more than ever before, it deserves the title of "The World's Wonder Metal." It is hardly likely, therefore, that the manufacturer who has won success with a product made of steel will be carried away by phantom claims for any material yet to be completely proven, no matter what other changes he makes.

In the big job before you—of translating your customers' daydreams into practical products—we specialists in steel should be able to help you. For we know what steel can give and what you can do with it. We know that, despite its well recognized virtues, you still may not have tested its full resources

You can still satisfy the craving for the new and unusual, still do it better, *with steel*. That is why we would like to talk it over with you. Our steel specialists will be glad to discuss with you, without obligation, any problems involving the various uses of steel. Just give us a call.

War-Tested U·S·S Steels for Your Peacetime Products

U·S·S HIGH STRENGTH STEELS *to resist corrosion and increase strength without adding weight.*

U·S·S COPPER STEEL *to give at least twice the atmospheric corrosion resistance of regular steel at little additional cost.*

U·S·S HOT-ROLLED AND COLD-ROLLED STEELS *to provide the basic advantages of steel, plus maximum economy in accordance with the needs of each job.*

U·S·S ABRASION-RESISTING STEEL *to combat wear and friction.*

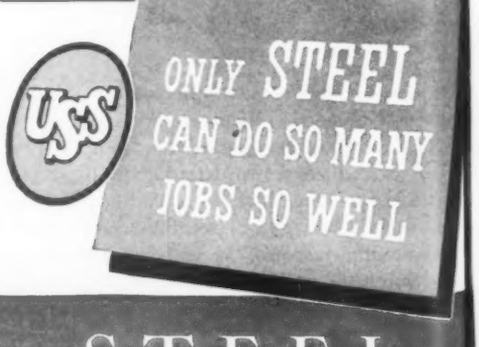
U·S·S STAINLESS AND HEAT-RESISTING STEELS *to assure high resistance to corrosion and heat, and to reduce weight.*

U·S·S CARILLOY ALLOY STEELS — *Special Steels for the special jobs of industry.*

U·S·S PAINTBOND — *A galvanized, Bonderized sheet that permits immediate painting and holds paint tighter.*

U·S·S VITRENAMEL — *Sheets designed especially for porcelain enameling.*

U·S·S ELECTRICAL SHEETS *for motors, generators and transformers.*



CARNEGIE-ILLINOIS STEEL CORPORATION

Pittsburgh and Chicago

Columbia Steel Company, San Francisco, *Pacific Coast Distributors*
United States Steel Supply Company, Chicago, *Warehouse Distributors*
United States Steel Export Company, New York

UNITED STATES STEEL

The way we head and thread this Handle-Bolt

May give you a Potent Idea!



You probably won't have any handle bolt jobs, but you'll have others, and we may be able to handle them as advantageously as we did this one for the Cleveland Ordnance office.

A supplier was needed to produce millions of handle bolts for steel ammunition containers. One requirement was a fast lead thread . . . split seconds count when these containers are opened in the field.

Inside of two weeks from the time we got the inquiry, we worked out the design, made samples and got approval. Eight days more saw the first test lot shipped and two weeks later production shipments began. In that time we had made tools, dies, taps and roller dies.

The design was worked out to permit quantity production by heading and roll threading. The purpose of the "steeple" head, as our men in the shop dubbed it, is to permit sufficient stock for the size of hole required, and yet keep within a practicable limit of volume of material for successful heading operation. We produced a double lead thread which more than met the requirements for speed of action, and also permitted much faster production than the type of thread originally specified.



Send for copy of this booklet containing 15 brief, diagrammatic stories of important saving on headed and threaded parts. Ask for the "Savings" booklet.



National
HEADED AND THREADED
PRODUCTS

THE NATIONAL SCREW & MFG. CO., CLEVELAND 4, O.



To the basic advantage of Ampco Metal — its exceptional resistance to wear, shock, fatigue, and corrosion — the centrifugal casting process adds plus values. Cast under pressures 50 to 300 times as great as in sand casting, Ampco centrifugally cast parts are the practical equivalent of "liquid forgings" — 100% sound (avoiding costly rejections), closer to finished size (saving metal). The Ampco organization furnishes all types of machining . . . rough, semi-finished, or ready for assembly . . . fabricated from an engineered alloy under close metallurgical control. . . . Let Ampco's broad facilities and experience play a constructive part in planning your post-war product. Write for bulletins and services of a competent field engineer.

A-6B

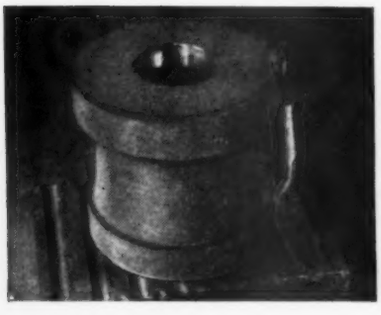
Ampco Metal, Inc.

Department P-10 — Milwaukee 4, Wisconsin

AMPCO METAL — a superior aluminum bronze to meet your requirements.
AMPCOLOY — general industrial bronzes.
SPECIAL COPPER-BASE ALLOYS.

AMPCO Metal
The Metal without an Equal

Sand and Centrifugal Castings • Wrought and Extruded Products • Precision-Machined Parts • Welded Assemblies • Ampco-Trode (coated aluminum bronze welding electrodes) • Ampco Non-Sparking Safety Tools.





Spending and Saving

(*Continued from page 290*)

the quantities have been overestimated, the purchaser is faced with a more difficult problem. However, on staple commodities, the items cancelled by one agency usually can be absorbed by another, or the quantities can be held over and applied against the needs of the next succeeding period by placing orders during the last days of the current contract period.

Price Terms

Throughout this discussion it has been made clear that "price" is variable in the sense that purchase price is not necessarily the cost of a commodity, and that ultimate price is effected in many ways—by specifications and purchase terms, duplication of efforts, storage and carrying charges, costs of inspection, bonds, transportation, deterioration and loss, restriction of competitive bidding, etc. That quality is more important than price and that sellers' costs are eventually reflected in the cost of commodities to the buyer has been emphasized. The suggestion has been made that the price quoted shall be net, and that cash discount shall be taken into consideration only in awarding identical tie bids.

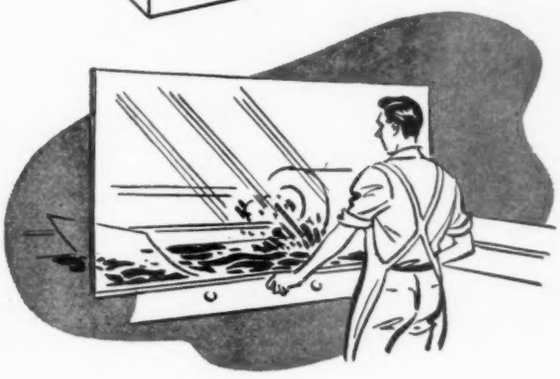
To all of these terms should be added a provision that price must be equitable, and firm for a fixed period of time. Normally there is no place in government commodity purchasing for the "cost plus" type of contract. Since government purchases are made from fixed budgets, purchasing officers generally are not permitted to bind the state for uncertain amounts.

Whatever the necessity may be for group award of contracts for commodities, the offer to furnish should be broken down into unit prices. It is not generally good practice to permit lump-sum bidding.

"Quoted price" is the term used to express the amount the state is to pay to the contractor for supplying a given item. But it is not enough to say, "What is your price for the commodity specified?" The question must be, "What is your price for the commodity specified, packaged, packed, transported, delivered, installed, and serviced in accordance with the prescribed specifications and purchase terms?" Since this involves problems of delivery, price terms must be further considered from this standpoint.



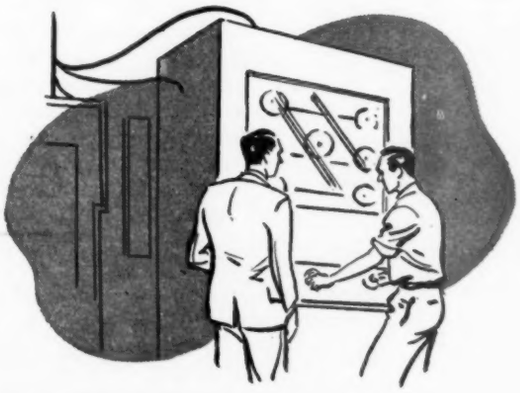
. . . how industry can provide visibility and protection . . . with *Glass*



FOR PERSONNEL Where equipment may splash or spray acids or throw minute particles, safeguard workmen with a screen of glass. If a process generates dangerous or uncomfortable heat, provide a screen of L·O·F Tuf-flex—the glass that is tempered for thermal shock.



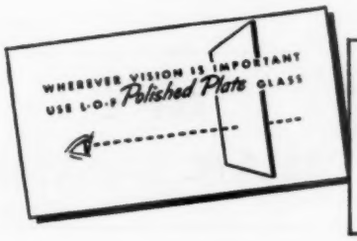
FOR MATERIAL IN PROCESS If you produce foods, chemicals, drugs or finely-machined parts that must be kept immaculately clean—confine those processes to glass-enclosed rooms. Glass enables you to keep the rooms "open" for light and visibility—yet closed from harmful elements.



FOR EQUIPMENT Is the machine running properly? Does it need lubrication? Is the flow of materials steady and unhampered? Safeguard your equipment by putting a window of glass in it—so you can *see* trouble before it becomes serious.

GLASS has the transparency, the hardness, the chemical and dimensional stability, the weather-resistance—to do many jobs for industry. It can be tempered for extra strength, for extra resistance to impact and thermal shock.

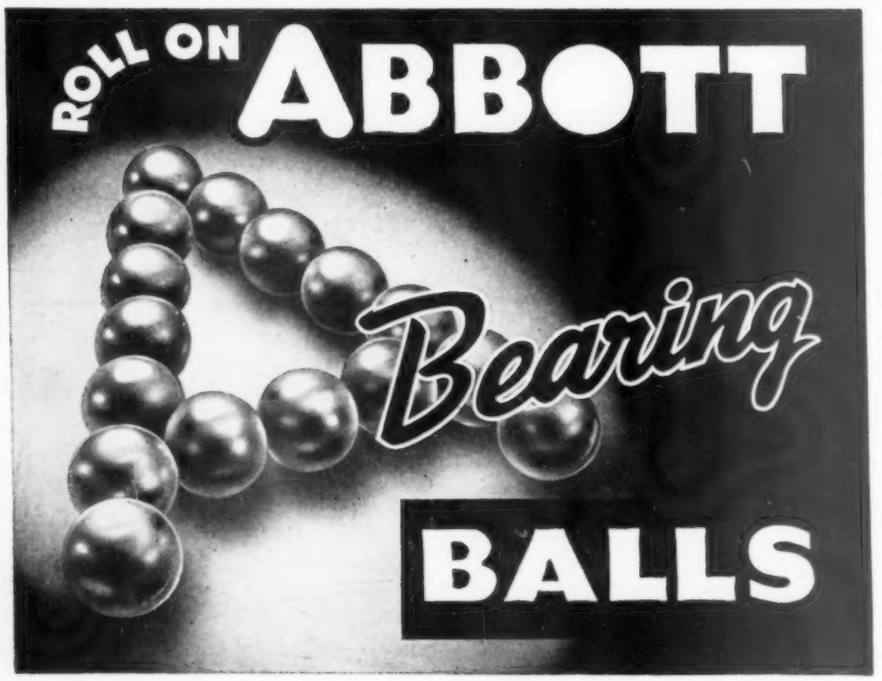
If you desire visibility in any of your processes, equipment or buildings—chances are that glass can do the job for you. We'd welcome an opportunity to show you how. Libbey·Owens·Ford Glass Company, 59104 Nicholas Building, Toledo 3, Ohio.



L O F

LIBBEY·OWENS·FORD

a Great Name in **GLASS**



the BURDEN rests on them!

Get acquainted with these mighty mites and recognize their importance!

•

The daily performance of BEARING BALLS — the "working parts" of your assemblies — is worthy of your serious consideration. The weight of the burden rests solidly on BEARING BALLS, yet they complain not nor cry out because of "overwork". In many load-carrying jobs "rest periods" are unknown to BEARING BALLS.

•

Consider the tremendous contribution BEARING BALLS are making to war-time production. ABBOTT is proud to share in that responsibility. Today, as always, ABBOTT BEARING BALLS are "carrying the load as planned". For uninterrupted performance specify "ABBOTT".

ABBOTT'S A 35th YEAR



ROLL ON ABBOTT Bearing BALLS
THE ABBOTT BALL COMPANY HARTFORD 10, CONN. U.S.A.

Patent Law For Purchasers

(*Continued from page* 110)

such manufacture is continued after the patentee has cancelled the license contract.

All persons who apply for patents automatically forfeit their rights to "trade secrets" since the invention must be fully disclosed to the public and thus the invention may be known to all who read the patent. In other words, a valid patent is a legal disclosure of the invention which may be manufactured, used and sold by all, after expiration of the patent. See Johnson, 141 Fed. Rep. (2d) 660.

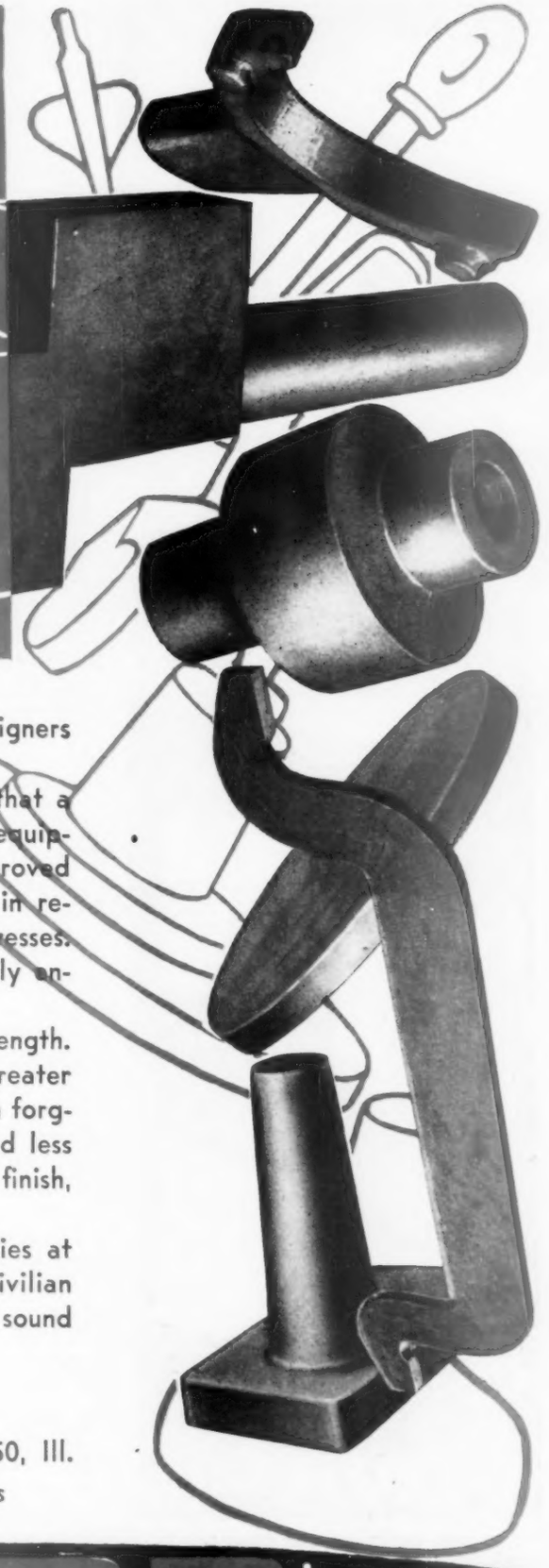
Protective Clauses

Of course, any and all reasonable contracts, and clauses therein, are valid by the terms of which a patentee agrees to assume full responsibility for losses sustained by purchasers as a result of suits involving infringement. This statement, however, does not mean that the purchaser always aviods subsequent liability, for it is possible (and frequently is the case) that the patentee is not financially able to fulfill his agreement to make the purchaser safe against losses from this source. But if the patentee is financially responsible and refuses to comply with a guarantee of this nature, the purchaser may sue and compel the patentee to fulfill the exact terms of the contract. Therefore, for the sake of precaution it is advisable that all purchase contracts shall contain a clause, as follows:

"The patentee and also the seller guarantees to the purchaser that the subject of this sale contract is not infringement on other patents. Said patentee and seller agrees to compensate said purchaser for all expenses incurred and to be incurred by said purchaser as direct and indirect result of suits filed by others who claim that said subject of sale infringes another's patent. Said patentee and seller agrees to supply funds for defense of said suits, the amount of said funds to be determined by said purchaser, who shall be the sole judge as to the counsel who shall be employed to defend said suits and the amount or sum which shall be paid to said counsel."

BUY WAR BONDS

BLUEPRINT YOUR POST-WAR FORGINGS REQUIREMENTS *Now!*



At Kropp Forge we are already working with designers of postwar machines and equipment.

It is gratifying, though not surprising, to note that a more extensive use of forgings is involved in the equipment of the peacetime era. Forgings have liberally proved their worth in armament applications — notably in resistance to tensional, torsional and compression stresses. Forgings are coming out of the war with a greatly enhanced reputation.

Forgings provide metals at their ultimate strength. They save metal, weight and space because their greater strength permits the use of parts of less bulk. With forgings there is less incidence of internal defects and less scrap. Forgings require less time to machine and finish, with proportionately lower tool costs.

As our war assignments are completed, facilities at Kropp Forge are becoming available for essential civilian applications. Design your postwar products around sound Kropp *flat die, drop or upset* forgings.

KROPP FORGE COMPANY

5301 W. Roosevelt Road Chicago 50, Ill.

Engineering Representatives in Principal Cities

SERVING INDUSTRY SINCE 18 31 OVER 100 YEARS — KROPP FORGE CO.

KROPP

ARMY ★★ E ★★ NAVY



I'm Henry P. Coccus
— A mean little pup —
With the flu I have cut a gay caper
My tribe I bring up
On a used drinking cup,
But, we're out when the cup's made of paper!

AJAX ▶ Paper Cups
◀ AERO Paper Cups
COLUMBIAN ▶ Paper Cups
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USE PAPER CUPS

LOGAN DRINKING CUP COMPANY
68 Prescott Street, Worcester 5, Mass.

PACIFIC COAST ENVELOPE COMPANY
416 Second Street, San Francisco 7, Calif.

C-13

Divisions of
UNITED STATES ENVELOPE CO.
13 Plants from Coast to Coast

Inventory Control

(*Continued from page* 105)

items of which varying amounts are issued spasmodically over a yearly period, 2 to 8 units at a time. In each such instance, the minimum, the ordering point, and the order quantity must depend upon the judgment of the supervisor responsible for the use of that item.

Under this control system, certain duties and procedures are assigned to various members of the supply organization.

Posting Clerk

1. When the balance on hand reaches the indicated ordering point, by issues from stock, a green tab is attached to the proper space at the top of the record card.

2. When the balance on hand is reduced almost to the ordering point, within one month's average requirements, a blue tab is attached, signalling the possibility of including this item in an order to the same vendor for other parts (which have reached the ordering point) if it is expedient to do so.

3. When the monthly rate of use shows a change from the monthly average rate, amounting to 10% or more, an orange tab is attached to signal the Order Clerk for investigation and probable revision of ordering point and quantity to fit the new condition.

4. When the balance on hand reaches the minimum, or below, a red tab is attached to signal danger. This is the indication that a vendor has failed to make delivery as promised or that the rate of use has increased, reducing the balance to minimum before replacements are received. Prompt action will result in procuring the material before the stock is exhausted.

The Posting Clerk is guided in attaching signal tabs by comparing the balance on hand with the ordering point and minimum, regardless of the reason for the balance being reduced or increased. Thus, if the unit stock card is changed through the correction of a posting error, or as a result of a physical inventory check and adjustment, the colored tabs are attached in accordance with the actual balance. The tabs are removed by the personnel involved after action is taken in accordance with the signals, and such action is noted on the stock record card.

1. When the *Green Tab* is attached to a stock record card by the Posting Clerk, an order is issued for the amount indicated under "Order Quantity".

2. If only one or two items are indicated for ordering from a vendor, the Order Clerk inspects the cards with *Blue Tabs* having the same vendor key number idtntification and adds these items to the order.

3. *Orange Tabs.* Order Clerk, with Storekeeper, investigates the reasons for change and revises the minimum, ordering point, and order quantity, if necessary.

4. *Red Tabs.* These are the danger signals indicating that the last issue has reduced the balance on hand to the indicated minimum, or less. Order Clerk, with personnel responsible for expediting, take whatever action is necessary to secure prompt delivery of replacements before the stock is reduced to zero. The red tab is not removed from the stock record card until enough stock is received to increase the balance above the minimum.

Card Auditor

1. Makes a continuous mathematical audit of unit stock record card postings.

2. Checks and posts total number of units issued each month in the space provided.

3. Attaches orange tab to stock record card when monthly issues

(*Continued on page* 302)

IRON HORSE
BRAND
OILY WASTE CANS
Protect Your Plant From Fire



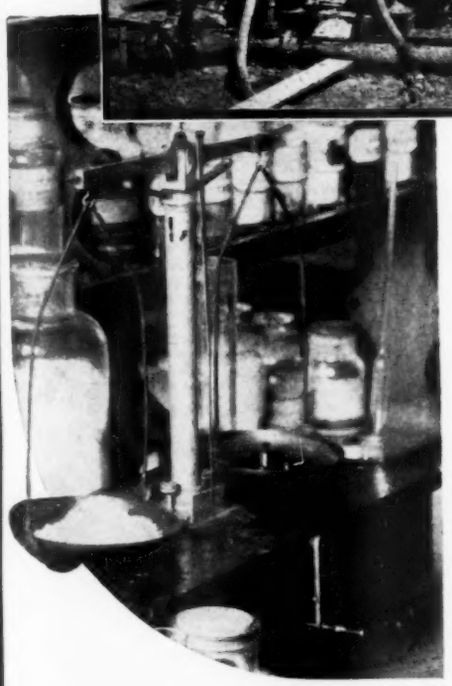
No. 18 FL
14 gallon capacity
Also No. 18HO
Hand operated

Decrease fire hazards wherever oily waste and inflammable material are used. With or without foot lever. Approved by Underwriters' Laboratories, Inc. and Associated Factory Mutual Fire Insurance Companies.

ROCHESTER CAN COMPANY
90 GREENLEAF ST. ROCHESTER, N. Y.

REPUBLIC *Rubber Quality*





assures performance

When a conveyor belt must handle hot slag, or a hose conduct high octane gasoline, continuous performance depends on how well either has been built for that job. One must resist heat and abrasion, the other repel destructive aromatic constituents of the gasoline. Many other industrial applications of mechanical rubber products are equally exacting. With various types of man-made rubber to select from, each with specific properties, Republic technicians choose the material and determine the correct construction to meet the required service



WE ARE PARTICIPANTS IN THE OWNERSHIP AND OPERATION OF NATIONAL SYNTHETIC RUBBER CORPORATION

REPUBLIC RUBBER

YOUNGSTOWN 1 • OHIO

HOSE • BELTING • MOLDED GOODS • PACKING • EXTRUDED PRODUCTS

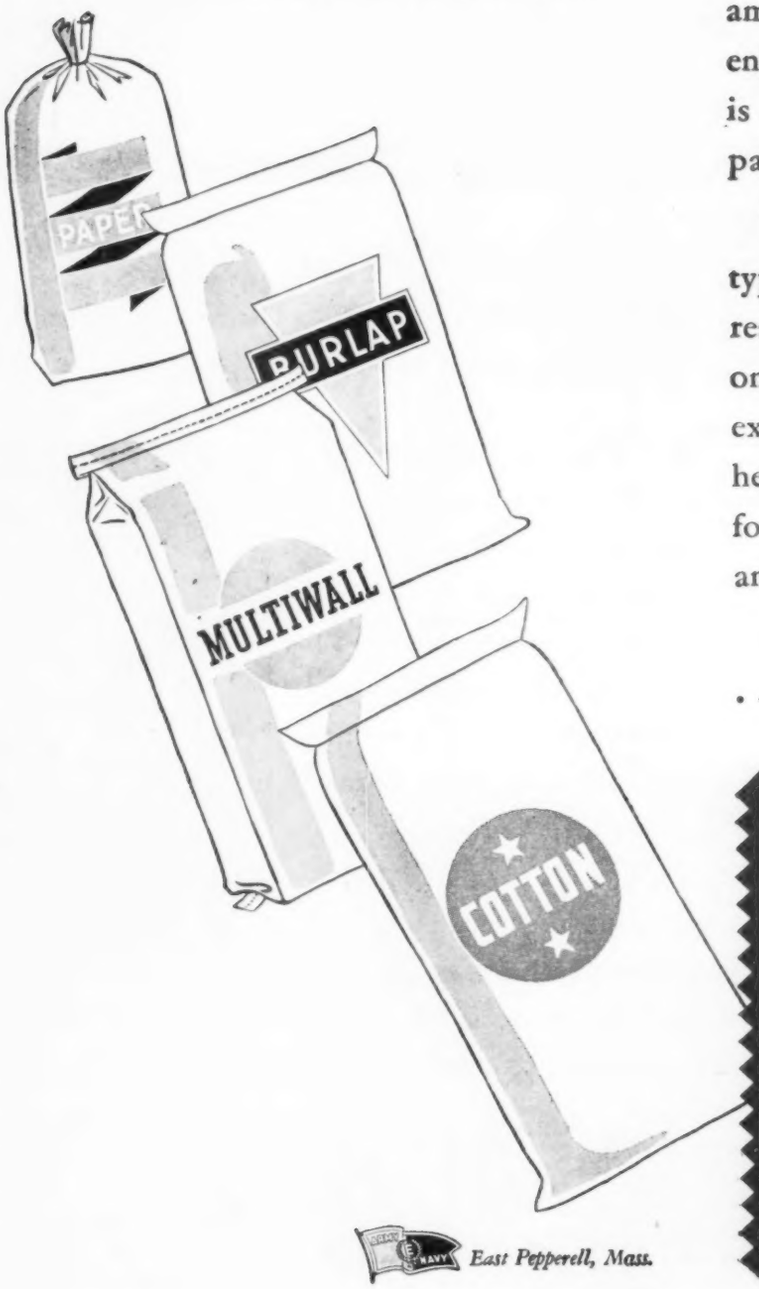
DIVISION OF

LEE RUBBER & TIRE CORPORATION



Whatever's the BEST BAG FOR YOUR USE

. . . we make it!



WHEN you buy your bags from Bemis, among the important advantages you enjoy is this: You can buy whatever type is best for your particular use—cotton, paper, multiwall, burlap or waterproof.

Bemis is a leading producer of *all* types of bags and consequently has no reason to high-pressure you toward any one type. We have no favorites. If our experienced packaging specialists can help you to determine which is the best for your use, you may be sure that their analysis and advice will be unbiased.

Whatever's the *best bag for your use* . . . we make it.

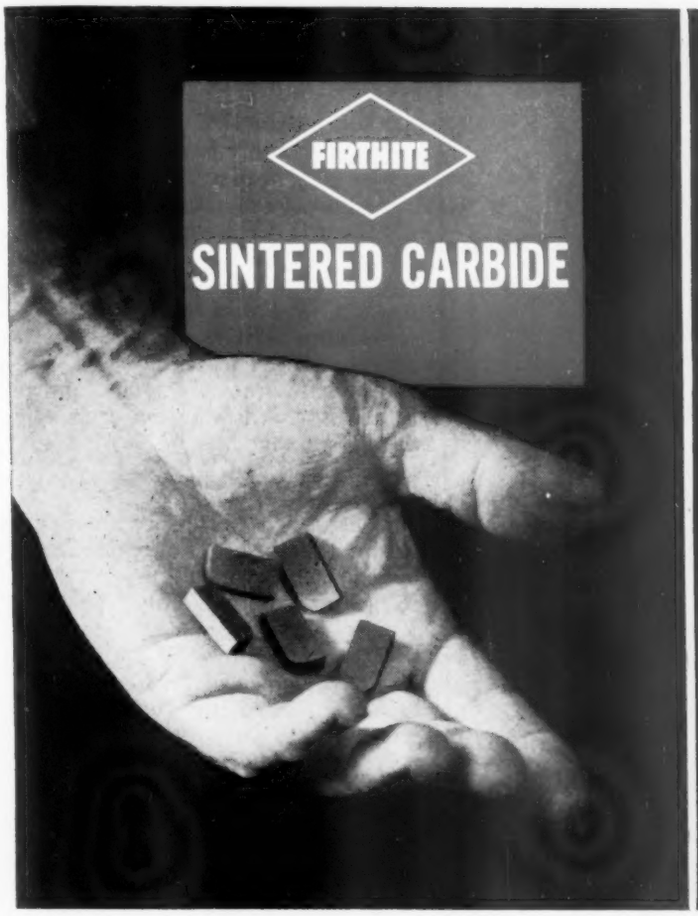
East Pepperell, Mass.

BEMIS BAGS

BEMIS BRO. BAG CO.

OFFICES: • Baltimore • Boston • Brooklyn • Buffalo • Charlotte • Chicago • Denver • Detroit • East Pepperell • Houston • Indianapolis • Kansas City • Los Angeles • Louisville • Memphis • Minneapolis • Mobile • New Orleans • New York City • Norfolk • Oklahoma City • Omaha • Peoria • St. Helens, Ore. • Salina • Salt Lake City • San Francisco • Seattle • Wichita • Wilmington, Calif.

BETTER BAGS SINCE 1858





THERE ARE PLACES FOR BOTH . . .

Firth-Sterling, long specialists in making steels for shop tooling, early recognized the possibilities of carbides as a means of extending the improvement in shop practice brought about by the super high-speed steel—CIRCLE C. **But, there is a place for both . . .**

Where the highest speeds are obtainable or materials are hardest, FIRTHITE is the "last word" in a cutting material. It is used at speeds up to ten times those possible with high-speed steels. Where speeds above average are permissible or materials are "on the hard side," CIRCLE C will cut *at least* 25% faster than ordinary grades of high-speed steel. Send for descriptive literature on these remarkable materials.

For instance:

FIRTHITE *removes* 730 pounds of gray-iron casting metal per hour instead of 180 pounds;

drills a gun barrel in 23 minutes instead of 1 hour;

enables milling-cutters to run at 1,000 feet per minute instead of 100 feet with previous materials.

For instance:

CIRCLE C *machines* hard die blocks in 28 hours instead of 42 hours . . . doubling production between grinds — versus regular high-speed steel;

turns two to ten times more pieces of heat-treated alloy steel between grinds than other high-speed steels.

See the Firthite Movie to be shown in Booth No. B-146 at the National Metal Congress, Cleveland, O., Oct. 16 to 20, incl.

Firth-Sterling Steel Company

Offices: McKEESPORT, PA. NEW YORK - HARTFORD - PHILADELPHIA - CLEVELAND - DAYTON - DETROIT - CHICAGO - LOS ANGELES



CHICAGO

"SAFETY PLUS" SOCKET SCREWS

have great holding power

Chicago "SAFETY PLUS" Socket Screws are not only accurate, but they are tough and strong. Outstanding features are—electric furnace alloy steel—clean, true heads—sharp, full threads—accurate sockets—and exceptional holding power. Use Chicago "SAFETY PLUS" Products—you'll find *there is a difference.*

Manufactured by The Chicago Screw Company, producers of fine threaded products since 1872, Chicago "SAFETY PLUS" Products are being used by American industry everywhere.

ARMY E NAVY

These Fine Products are sold only thru Authorized Distributors

THE CHICAGO SCREW CO.
ESTABLISHED 1872
1026 SO. HOMAN AVENUE CHICAGO 24, ILL.

Inventory Control

(*Continued from page 298*)

are more than 10% above or below average monthly issues as indicated under that heading.

4. Transfers information from record cards to Inventory Analysis Sheet, biannually, for Materiel Control Section.

Storekeeper

Surveys Analysis Sheets, takes action where necessary, and forwards sheets to Material Control Supervisor, indicating on each item the action taken.

Analysis and Survey Procedure

Control procedures are automatic within the limits of the pre-determined factors listed on the stock record cards and guiding the actions of clerical personnel. Policy decisions are not automatic, but depend on an analysis of performance. This is accomplished by the following procedure:

1. Card Auditor transfers data from Stockroom Unit Control and Purchase Record Cards, biannually, under the following headings: Pan American Airways number; Manufacturer's number; Key word and description; Used on; Unit; Amount on hand; Maximum and minimum quantities; Average monthly use; Last purchase; Last issue; Delivery time; Remarks.

2. Inventory Analyst analyses these sheets, item by item, to determine (a) whether minimum is too high or too low; (b) whether amount on hand is too high or too low in relation to the average rate of use, length of delivery time, and the required minimum; (c) frequency of use and purchase; (d) non-use of the item, indicating potential obsolescence.

3. Inventory Analyst processes the results of his analysis, checking with the Supervisor responsible for use of the item and securing authority to revise minimum quantity when the need for such a revision is indicated, also revising the ordering point or order quantity when necessary to conform with the results of analysis. Any apparent cases of surplus or obsolescence are verified with the Storekeeper and Supervisor responsible for use of the item. If this condition is verified, he secures authorization to transfer or dispose of such surplus or obsolete items, and lists them on a certified surplus report which shows, in addition to the description and amount of each item, the reason and the necessary

(*Continued on page 304*)

This 4-Wheel RIDGID cuts pipe *fast*



Workholder sets to pipe size instantly



Dies set to pipe size in 10 seconds

Here's your next new work-saver die stock!



Even where you have room only for a quarter turn . . .

● Clean speedy pipe cutting—the 4 cutting wheels and short handle of this No. 42 make it easy, especially in tight places where you barely have space for a quarter turn. It's a husky tool, well balanced, with strong malleable frame that keeps the heat-treated special steel wheels always cutting true. It comes in two sizes: No. 42, capacity ½" to 2"; No. 44, 2½" to 4". For fast easy pipe cutting anywhere, ask your Supply House for this efficient 4-wheel RIDGID.

Regular RIDGID *Heavy-Duty Cutter —5 sizes to 6" pipe.*

RIDGID No. 65R—Perfect threads on 1" to 2" pipe with *one* set of dies



No. 65R looks like this in front.

● Start your post-war right—with a threader you'll enjoy using. No bother changing dies in this RIDGID—spin it up, spin it down and it's set for micrometer perfect threads on 1", 1¼", 1½" or 2" pipe. A quick turn of gauge plate sets workholder, no bushings. Threads with surprisingly little effort. High-speed steel dies: rugged steel-and-malleable construction. Ask for it at your Supply House.

Sold by Supply Houses Everywhere — **Millions of RIDGID Tools in use**

RIDGID
★ PIPE TOOLS ★



THE RIDGE TOOL COMPANY
Elyria, Ohio, U. S. A.

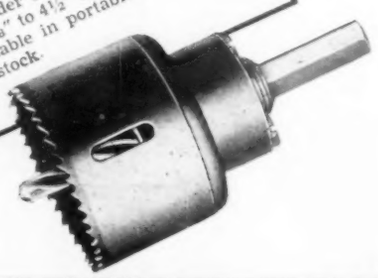
Fast Tough



Heavy feed at high speed!

Heavy feed at high speed spells doom to the ordinary hack saw blade; down-time for your machine, extra expense in money, man hours, and production. The MARVEL Hack Saw Blade, because it is positively *unbreakable* under these conditions, should be "a must" tool in every efficiently operated shop. A tough alloy steel back is electrically welded to high speed steel teeth, producing a blade that can be pulled to almost unlimited tension; can withstand extra heavy feeds and the heat and abrasion of high speed heavy duty sawing.

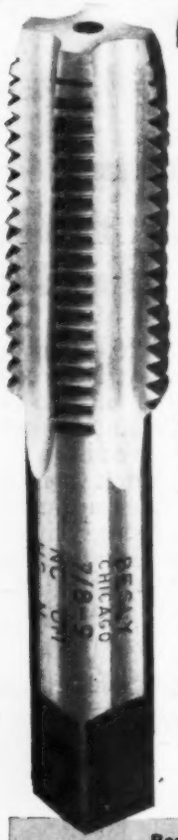
The same exclusive *unbreakable* feature of MARVEL Hack Saw Blades is also a feature of MARVEL Hole Saws, giving these saws the ability to stand up under abuse. MARVEL Hole Saws cut holes from 5/8" to 4 1/2" diameter in stock up to 1 1/8" thick. Usable in portable drill, drill press, or lathe tail stock.



Complete Range of Metal Sawing Machines

Being the largest exclusive manufacturer of metal sawing machines and blades, both hack saw and band saw type, we have the correct answer to your cut-off problems. Each MARVEL model has a distinct application, so write us and we will send our catalog, price, and recommendation for the saw to fill your requirements most efficiently. MARVEL sawing engineers are also available to discuss and analyze your cut-off work. (Without obligation of course)

ARMSTRONG-BLUM MFG. CO.
5700 W. Bloomingdale Ave., Chicago 39, Illinois, U.S.A.



3 Reasons To Make BESLY TAPS your choice

1 • The high quality of Besly Taps is guaranteed by uniform specifications for material, skilled manufacture, rigid inspection.

2 • Besly has more than 53 years experience in manufacturing standard and special taps at their Beloit, Wis. factory.

3 • Besly Taps are stocked and sold through distributors, added selectively as sufficient production makes it certain they can render service in their areas.

Write for Besly's Tap Catalog and data book, or ask a field engineer to call.



Besly Taps • Besly Grinders and Accessories • Besly Titan Abrasive Wheels

BESLY

Charles H. Besly and Company
118 N. Clinton St, Chicago 6, Ill. Factory: Beloit, Wis.

A HALF CENTURY PLUS — ONE

SIMONDS for GEARS

Since 1892

Still making good gears, after 51 years of service to industry. A year more than a half century of experience in the manufacture of all types — spur, bevel, mitre, worm, rack, internal, etc. Also gears made to your order. In addition SIMONDS distributes Ramsey Silent Chain Drives and Couplings.

THE SIMONDS GEAR & MFG. CO.
25th and Liberty Sts.
PITTSBURGH, PA.

Inventory Control

(*Continued from page* 302)

approval for classifying it as surplus.

4. The Materiel Control Supervisor receives the report of surplus inventory material discovered and verified by the Inventory Analyst, and has the responsibility of arranging for transfer between stockrooms or making other disposition.

* * *

Plastics

(*Continued from page* 85)

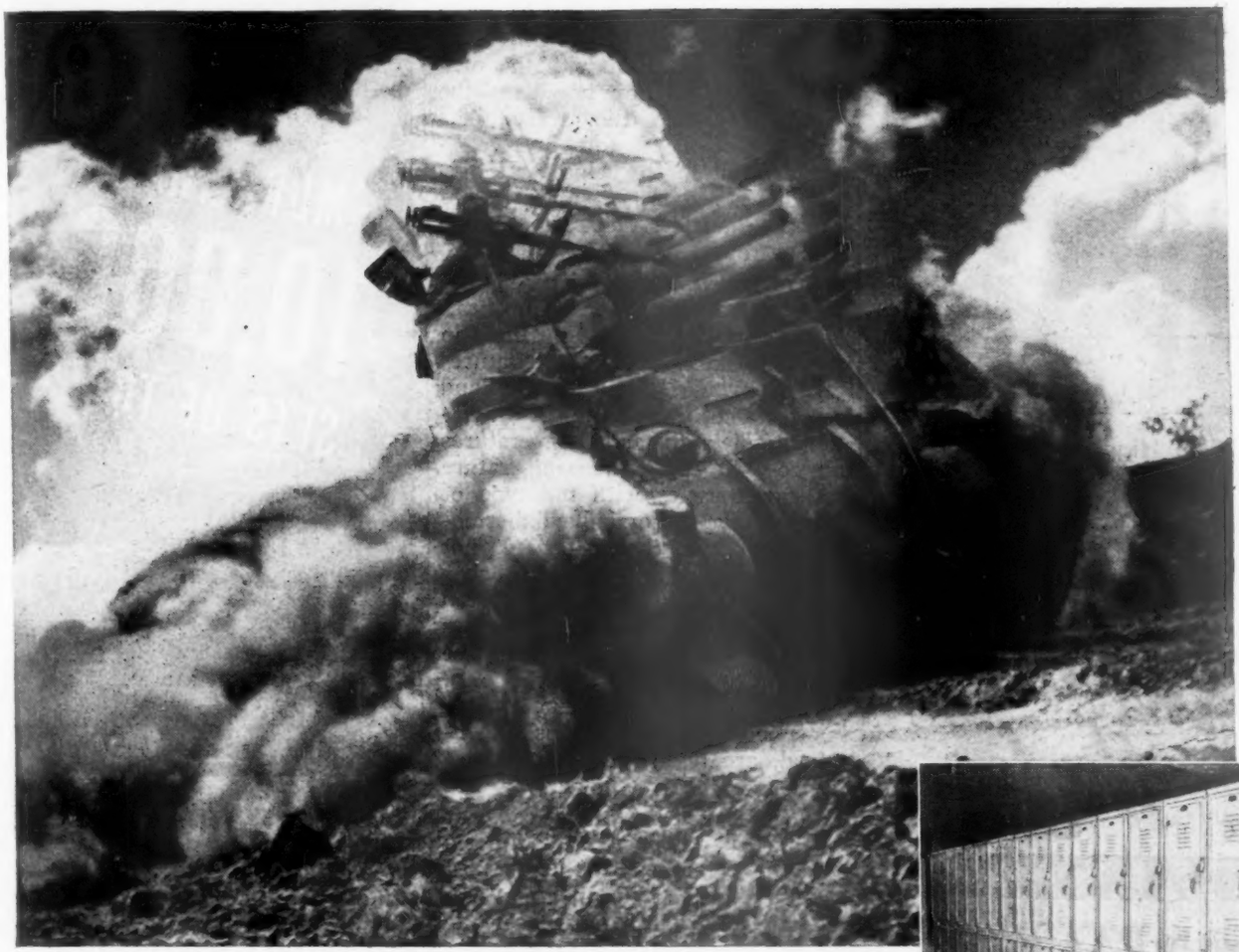
Light Weight. This is another of the very important qualities of plastics. The specific gravity of plastics is about one-sixth that of steel, about one-third that of aluminum, and one-half that of glass. The lightest of the plastics are the polystyrenes, which have a specific gravity of 1.06. The average for molding plastics is about 1.30. Heavier weight, thermosetting plastics, however, are not necessarily stronger, and products molded of mineral filled plastics do not have nearly the physical strength of the all purpose plastics with wood-flour filler, or the thermoplastic groups.

Corrosion Resistance. You are told that plastics are non-corrosive. That is true generally, with a slight if. Most plastics have excellent resistance to alkalis, acids, wartime gin and other solvents, but all types are not immune to all of these things. Some are utterly indifferent to aqua regia, concentrations of sulphuric acid, reagents, solvents, sunshine and everyday sweat. Some are attacked by weak acids and alkalis, and some that are not affected by the strong acids and alkalis, are soluble or swell in certain of the organic solvents, and some that resist the solvents are affected by strong acids.

Electrical Qualities. All plastics have definite dielectric qualities, insulating value and low power loss factor. Here again, like the products of Bacchus, all plastics are good, but some are better than others. Special formulations will resist exceptionally high voltages; some will track incident to arcing thus aggravating this factor, and others are free from arcing. Resistance to heat must also be considered. Some plastics have good heat resistance; others do not, and heat tends to detract from their

(*Continued on page* 306)

Making strong the things that make America strong





Supporting a Tank's Attacks . . . Speeding a Locker's Schedule

ITS ROARING GUNS . . . its quick starts and sudden stops . . . its steep climbs and thudding drops . . . all combine to give a tank a beating no other vehicle is asked to take. Its bolts and nuts must be made of rugged stuff . . . tough metal, strong heads, sturdy threads . . . subjected to scrupulous inspection.

A locker leads a lazy life in use . . . but sluggishness on the assembly line can throw its production schedule out of gear. Here, bolts and nuts must be accurately-dimensioned and clean-threaded for quick get-away and speedy run-on.

Maximum resistance to every strain your product must stand . . . top assembly speed that guards against bottlenecks and mounting costs: these are built into every RB&W EMPIRE fastener.

For 99 years, constantly improved strength, accuracy and finish of RB&W products have resulted from continuous research and progress. Starting with RB&W's development of the first automatic cold-header, this progress has been sustained by great investments in the most modern manufacturing equipment and methods of quality control.

RB&W's proved ability to put the ideal combination of strength, accuracy and finish into fasteners explains why the RB&W EMPIRE brand is so generally specified in the best farm implements, automobiles and aircraft; by railroad and construction engineers; in power and transmission equipment; and by general industry . . . and why RB&W products can help you make *your* products stronger and faster.

RB&W

Russell, Burdsall & Ward Bolt and Nut Company. *Factories at:* Port Chester, N. Y., Coraopolis, Pa., Rock Falls, Ill. *Sales offices at:* Philadelphia, Detroit, Chicago, Chattanooga, Los Angeles, Portland, Seattle.



BOLTS EMPIRE NUTS RIVETS

AND ALLIED FASTENING PRODUCTS · SINCE 1842

RUSSELL, BURDSALL & WARD BOLT AND NUT COMPANY



CUB High-Production
AIRBRUSH

- Lightweight, perfect balance, enable operators to work longer hours at top speed.
- Superior performance speeds production rate; assures quality finishing.

Finish the Job
FASTER
with PAASCHE
AIRPAINTING
Equipment

Proof that Paasche Airpainting Equipment steps up production — saves man-hours—improves quality, is evidenced in hundreds of factories—in shipyards—in aircraft plants—and on those big construction painting jobs.

Investigate Paasche time-saving Automatic Units — safer, cleaner Water Wash Booths—the High Production Airbrush illustrated — and other equipment for faster finishing.

Write for full information and literature. Paasche Airbrush Co., 1954 Diversey Parkway, Chicago 14, Illinois.

Paasche Airbrush (Canada) Ltd., 110 Elm Street, Toronto.

Paasche
AIRPAINTING EQUIPMENT
Manual, automatic and special airpainting equipment, including booths, pressure regulators, airconditioners for compressed air lines, air dusters and stripers.

Plastics

(*Continued from page* 304)

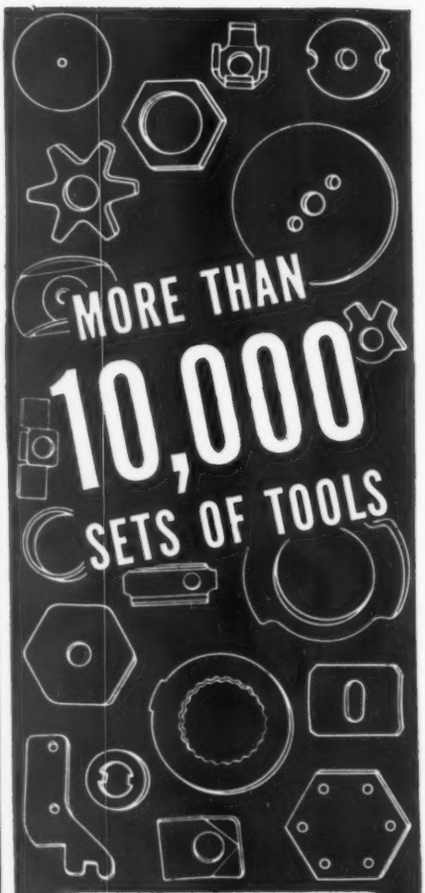
normal electrical qualities. In any case where electricity is involved it is wise to consult with the men who have the "know how" and the "know what", for they are familiar with all of the factors involved—dielectric strength, volume resistivity, dielectric constant, moisture absorption, heat resistance, and power loss factor.

Heat Resistance. This brings up the matter of resistance to heat. The general run of plastics now in use will stand up in temperatures ranging from 170° to 350° F. and some of the heat resistant formulations will withstand temperatures up to 400° F. The temperature resistance varies with the type of plastic. The mineral filled thermosetting plastics, though they do not support flame, are likely to char and break down if subject to too high temperatures. Other types will actively support flame. The thermoplastics will soften, lose form, or even melt, and the standard cellulose nitrates, as previously mentioned, are highly inflammable.

Dimensional stability. This is a very important factor to consider from the standpoint of molding and from the standpoint of use. Most plastics shrink in the molding process, and allowance must be made for such shrinkage. The polystyrenes are claimed to offer the best dimensional stability for their molding does not involve the use of plasticizers that vaporize during the molding process, nor slowly vaporize after a product has been completed and is in service, with resultant warpage or shrinkage. This is also true of rigid vinyl sheets. There are phenolic formulations that are quite stable dimensionally though they are not used for products that would rate high in beauty salons. You will find them in bearing racings, cams, gears, housings, etc., where utility and stability are of first importance.

Moisture absorption. Plastics also differ materially in this factor, which is quite important from the standpoint of dimensional stability, electrical qualities and varied uses. Some are inclined to absorb too much moisture and others have an almost nil affinity for water. This is one of the important things your molder will consider when telling you what plastic should be employed for a particular end use.

(*Continued on page* 308)



...to fill your requirements for
SPECIAL WASHERS & SMALL STAMPINGS

When you need Special Washers or Small Stampings *send us your blueprints or specifications.* If one of our 10,000 sets of tools won't give you what you want, we will place our expert Tool & Die Department at your disposal.

We are specialists in designing and producing Special Washers and Small Stampings from steel, brass, copper and other metals. Our quarter-century of experience is your assurance of careful attention to every detail.

Also a full line of Standard Washers—U.S.S., S.A.E., Burrs, Etc. — in kegs or cartons.

THE MASTER PRODUCTS CO.
6400 PARK AVE. CLEVELAND 5, OHIO

What The WELL-DRESSED Welder Is Wearing



AO No. 320-4 Welding Helmet

Provides maximum protection, flexibility, comfort.

AO No. 3080 Welders' Goggles

Equipped with Calobar lenses. Protects against "flashed eyes" and impact from flying objects.

AO Welders' No. TX-100 Gloves

Gun cut of special chrome-tanned cowhide. Forefinger and thumb reinforced with added layer of horsehide. One-piece back lined with 6 oz. fleece lining that prevents chafing, insulates against heat.

AO No. 203-CL Short Jacket

Chrome leather jacket provides complete protection for arms, neck, chest, shoulders. Shirt style collar can be turned up to protect neck. Jacket is cut off straight across, covers operator's chest, armpits, and upper portion of back.

AO No. 207-CL Overalls

Chrome leather overalls give complete protection for legs, stomach and chest. Adjustment strap insures comfortable, safe fit at waistline. Fly has ample overlap and plenty of snaps to prevent sparks from rolling through. 11″ wire pocket. 24″ wide bottom makes pants easy to put over work shoes.

Features You Can't See

Cuffs of jacket have snap fasteners to assure fit at wrists. Pants are tailored for free action. Crotch is specially reinforced by closely spaced rivets. Pants also feature chrome leather shoulder straps for rapid adjustment.

AO makes a complete line of welders leathers.

American Optical
COMPANY
SOUTHBRIDGE, MASSACHUSETTS



Plastics

(*Continued from page* 306)

Color. This is the world's greatest merchandising appeal. It is one thing you get in plastics that you do not get in the old line materials, though all plastics are not available in a wide color range. The color range of the molded phenolics, for instance, is limited. The light pastel shades are not satisfactory. Products usually are of somber hue—mahoganies and browns. On the other hand all of the colors, shades and tints of the rainbow or an Old English garden are available in the urea formaldehydes, cast phenolics, polystyrenes, vinyls and methacrylates. However, when thinking of the decorative or eye-appeal value of color, it is well to consider also the physical essentials of use-requirements. Your molder may tell you that the orchid shade you would like is prettier than a Powers model, but that the particular kinds of plastics in which it is available are minus some other quality that is more essential to the end use of the product.

However, it should not be felt that the dark colors that are characteristic of some plastics are detrimental to beauty or sales appeal. The dark, deep tones are quite attractive in the high finish that is inherently theirs incident to the molding process, and have a very definite eye-appeal especially when combined with metals.

Speaking of the physical qualities brings up the thought of wearability. Aside from possible breakage or fracture, how do the finishes and colors withstand handling, usage and aging, heat, light, sunshine, weathering, and so on?

Good Wearing Qualities

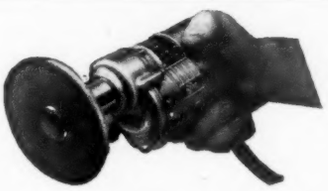
One of the practical values of plastics is their hard surface and resistance to abrasion and deep marring. Plastics differ slightly in these qualities. They are not nearly so hard as metals or glass. The Melamines approach the hardness of ceramics, with the current handicap of molding materials cost of $1.00 per pound.

The best evidence of the wearability of plastics is found in the thousands of plastics products in daily use. Moreover, they have an advantage that Powers models do not have and that is that their beauty is more than skin deep. With the exceptions noted above it is an easy matter to rub down serious

(*Continued on page* 310)

EXTRA JOBS
Done Quick and Easy!

These Accessories Make Any Electric Drill Adaptable for Many New, Different Jobs

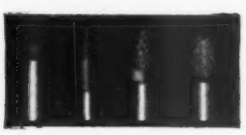


This Thor Sander Attachment can be used effectively on Thor Drills with emery papers 4" in diameter for both wood and light metal sanding. Its small size provides complete control and eliminates jumping around of the wheel.



MOUNTED ABRASIVE WHEELS AND POINTS

Use them for countless grinding finishing jobs on production and repair work, and in tool, die and machine shops.



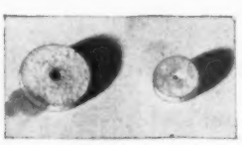
ROTARY FILES

Cannot be surpassed for fast, accurate, keen cutting and long life on scores of metal-removing jobs



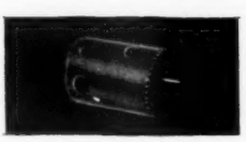
SANDING DISCS

All kinds of shops and plants find many uses for these discs for both wood and light metal sanding operations.



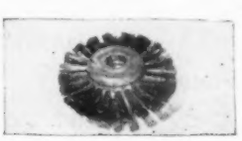
POLISHING WHEELS

Light polishing work goes faster with these wheels, which get into the smallest recesses ...turn out more work, better



HOLE SAWS

Cut clean holes in a hurry in wood, steel, brass, cast iron, marble, etc. Widely used in repair and maintenance work.



WIRE BRUSHES

Quickly remove carbon deposits, burrs, paint, rust and the like. Nearly every shop and plant finds many a use for them.

Genuine Thor Accessories FOR BEST RESULTS

WITH *Thor*

ACCESSORIES FOR PORTABLE ELECTRIC DRILLS

GET MORE FROM YOUR TOOLS AND DO DOZENS OF JOBS FASTER

By use of sanding discs, mounted abrasive wheels and points, rotary files, hole saws and other Thor accessories, specially designed and processed for use with electric drills—of *all* types and makes—you can make your tools adaptable to dozens of different jobs of grinding, sanding, polishing, cutting, filing, sawing and cleaning. You'll get new speed and better work with *genuine* quality Thor accessories used with electric drills.

A SIZE AND STYLE FOR EVERY JOB!

In the complete line of Thor accessories for portable electric drills there is a wide range of sizes and styles of each accessory. No matter what your requirements in mounted abrasive wheels and points, rotary files, sanding or polishing discs, wire wheel brushes, hole saws and disc saws, Thor can meet your needs for size, shape and style. And *every* Thor accessory is *engineered to its work*... specifically designed and selected for use with electric tools... to assure you *best* results in making your tools adaptable for many different jobs.

Don't take chances... don't waste time and money with uncertain, unadapted accessories—use *genuine* Thor accessories and be sure! For full information, specifications and prices write for Thor Catalog No. 38.

Stocked and Sold by Leading **DISTRIBUTORS EVERYWHERE!**

Thor accessories for electric tools are sold by leading mill supply, electrical, automotive, plumbing and hardware distributors, to give quick, convenient, reliable service. Write for name of your nearest distributor.

INSIST ON GENUINE *THOR* ACCESSORIES

Thor *Portable Electric Tools*

INDEPENDENT PNEUMATIC TOOL COMPANY

600 W. JACKSON BOULEVARD, CHICAGO, ILL.

Branches in Principal Cities

6200 E. Slauson Ave., Los Angeles, Calif.
315 S. Van Ness St., San Francisco, Calif.
1741 First Ave., S., Seattle, Wash.
54 E. Fourth, South, Salt Lake City, Utah

We'll take no chances on pump failures ... specify Ropers always



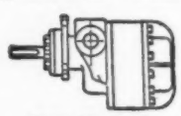
Why Roper Design Is The Most Practical

The simplest design ever conceived has made Roper the outstanding pump for efficient, dependable performance. In a Roper there are only 2 moving parts . . . equal-size pumping gears that "float" in operation with wear-free clearance. Fewer parts and time-tested construction enable Ropers to withstand heavier operating loads, give longer service, deliver a strong, pulsation-free flow.

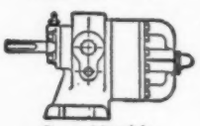
Sturdy and compact, Ropers require less floor space and permit periodic inspection of internal parts without disturbing piping or power units.

Whether used for general transfer or in a hydraulic mechanism, rely on a Roper for the most productive, economical service any pump can give you.

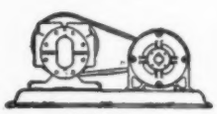
Competent engineering and consultation service is at your disposal.



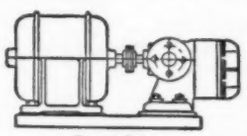
Pump Head for Flange Mounting



Pump Head for Foot Mounting



V-Belt Drive



Direct Drive

SEND FOR BULLETIN 1037

A summary and digest of factual information concerning pumps and pumping problems.

ROPER Rotary Pumps

GEO. D. ROPER CORP., ROCKFORD, ILL.

Plastics

(*Continued from page* 308)

abrasions and light chipping and restore them to their original sheen and primeness. Their use where more than ordinary abrading conditions are met, for instance the substitution of transparent plastics for glass in automobile windows, would prove quite unsatisfactory since road dusts and car washers would soon rob them of their virginal transparency. However, these plastics are ideal for gage dials, visible lubrication, transparent tubing, merchandise display pieces, and even artificial eyes, where physical wear is negligible. Furthermore, they will do one thing that glass can't do, and that is bend light around a corner.

The accomanying chart, known as The Plastics Comparator, was prepared by the Bakelite Corporation to serve as a guide in selecting the plastic or plastics *to consider for use*. It rates the materials numerically without any attempt to indicate relative differences. Thus the number (1) indicates the most suitable, and the higher numbers the order of suitability. The difference between (1) and (2) may in some instances be negligible and in others appreciable. The ratings take into consideration the most commonly used materials of each type. Special formulas under any one type might change the order of suitability.

The chart rates the Physical, Chemical and Electrical properties, though exact technical interpretation of it should be avoided. It is a result of laboratory tests, usage facts, and expert opinion, and it is meant solely as a *preliminary* guide. Final selection should be based on a study of specific data sheets, and consultation with a plastics engineer. Some of the new developments in plastics are not included.

However, utilization of the chart is easy and helpful. Say you are manufacturing refrigerators and it is decided to use a plastics panel. Checking the comparator you will find that Polystyrene offers very desirable qualities, rating No. 1 in water resistance, alkali resistance, acid resistance, thermal insulation and dimensional change on aging, and ease of molding. It rates high from the standpoints of color stability, hardness, cold flow and mechanical strength, and is fairly tough. The qualities in which it rates lowest are flammability and utility

(*Continued on page* 314)



The best trained troops require tempering under fire to become seasoned fighters. Springs, too, need proper tempering to fit them for the rigorous demands of tough fighting mechanisms. Because heat-treatment is so vital to spring performance, its selection and control come within the realm of our laboratory technicians, with automatic regulation that insures parade-ground precision—precise action—long service. No guesswork—Barnes-made Springs are under strict discipline in *every* stage of manufacture. They obey *your* orders.

CONSERVE METAL—DESIGN WISELY

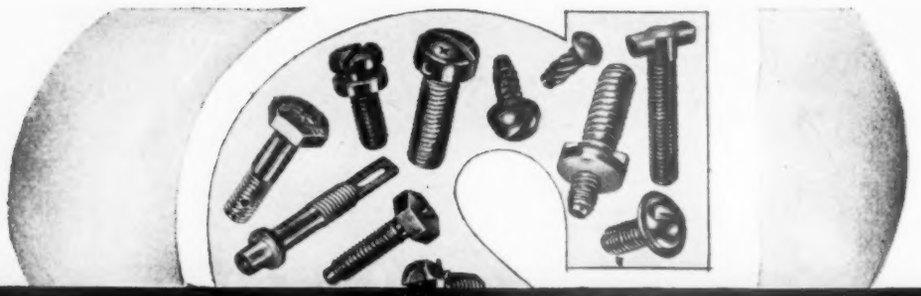
1918—THEN AND NOW

ARMY NAVY

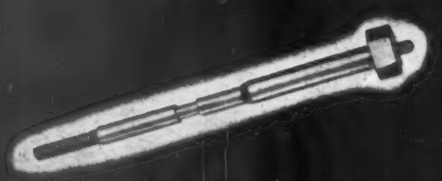
Barnes-made Springs

ENGINEERED PEP AND POWER

WALLACE BARNES COMPANY DIVISION OF ASSOCIATED SPRING CORPORATION BRISTOL, CONNECTICUT, U. S. A.



PLAN YOUR FASTENINGS NOW
For that Product in the Design Stage





"Cold-forging"—proof #24 . . . more each month

Plan now for fast assembly of your product before it leaves the design stage. Your preparation for postwar production should include an early and exacting choice of fastenings – standard or special – to eliminate unnecessary assembly problems later. Remember, your precise selection may be "the making" of your assembled product – for no product can be better than its fastenings.

Now is the time to let Scovill's broad experience in fastenings and skill in special design serve you. We will help you determine the best modern fastenings to use – one of our featured standard fastenings, or a part specially designed to fill your specific need.

A substantial saving was effected by cold-forging the unusual part shown above. You likewise may profit through Scovill ingenuity in cold-forging . . . saving money – materials – motions. Call our nearest Fastenings Expert **now** for assistance in planning your fastenings.

3 Standard Fastenings for Production Efficiency

1 Phillips Recessed Head Screws – The modern, effective, time-saving fastening device proven in tens of thousands of assembly lines. Other standard head styles are available.



2 Self-Tapping Machine Screws – Eliminate separate tapping operations for fastenings to castings, heavy gauge sheet metal, and plastics. Also with Phillips Recessed Head.



3 Washer-Screw Assemblies – When use of lock washers is indicated, the time-saving of pre-assemblies is obvious. Also available in standard slotted head styles.



SCOVILL MANUFACTURING COMPANY
WATERVILLE SCREW PRODUCTS DIVISION
WATERVILLE 48, CONN. TEL. WATERBURY 3-3151

NEW YORK, Chrysler Building . DETROIT, 714 Fisher Building . CHICAGO, 1229 W. Washington Boulevard . PHILADELPHIA, 18 W. Chelten Avenue Building
PITTSBURGH, 2882 W. Liberty Ave. . SYRACUSE, Syracuse-Kemper Insurance Bldg. . LOS ANGELES, 2627 S. Soto St. . SAN FRANCISCO, 434 Brannan St.





That's what we're shooting for!

Szelepka, Herd, Tallerico, Sauchak, Goldstein, McMahon—maybe it sounds like a Notre Dame line-up. One thing sure—it's All-American. For whether it's at our plant or yours, they are Americans, regardless of their race, color or ancestry.

An equal opportunity for everyone; that's the American way, that's what we're shooting for!







LEVINSON STEEL

The LEVINSON Steel Company

WAREHOUSERS · FABRICATORS

33 Pride Street, Pittsburgh, Pa.

LS-3



Production Service or Intermittent Service

Hoists and trolleys are indispensable tools which simplify material handling, either lifting or shifting. • When hoists are needed for repeated handling of loads, a FORD TRIBLOC of spur gear construction is especially built for the service. Construction and design provides maximum in safety and efficiency at a minimum maintenance cost. • Made in capacities from ¼ to 40 tons. • For the occasional lifting of loads of from ¼ to 2 tons, a FORD DIFFERENTIAL HOIST offers the ideal solution. It is simple in construction and inexpensive in price. • Like other ACCO products, Ford Chain Block Division Hoists and Trolleys are essential in peace,—vital in war.

In Business for Your Safety

AMERICAN CHAIN & CABLE COMPANY, INC.

BRIDGEPORT, CONNECTICUT • Aircraft Controls, American Chain, American Cable Wire Rope, Campbell Cutting Machines, Ford Chain Blocks, Hazard Wire Rope, Manley Garage Equipment, Maryland Bolts and Nuts, Owen Springs, Page Fence and Wire, Reading Castings, Reading-Pratt & Cady Valves, Wright Hoists, Wilson "Rockwell" Hardness Testers. • In Canada—Dominion Chain Company, Ltd. In England—The Parsons Chain Company, Ltd., and British Wire Products, Ltd.

Plastics

(*Continued from page* 310)

around inserts, both of which are of minor importance from the standpoint of the product and its use. You may have been thinking of a urea formaldehyde one of the more common plastics, but on referring to the chart you will note that it has a low rating from the standpoints of water, alkali and acid resistance, thermal insulation, and does not rate quite so high as the polystyrene in toughness. Obviously, the polystyrene offers very definite service advantages. The chart emphasizes how end uses warrant careful study when decision is made to use plastics in a product or part.

* * *

Packages and Palletizing

(*Continued from page* 90)

ages. It is up to the manufacturers who fill those packages to see to it that they never fail to get where they are going because specifications and proved methods which assure the maximum chance of delivery are ignored.

These specifications and methods are readily available to all Navy suppliers upon request to the Bureau of Supplies and Accounts, Field Operations Branch, Navy Department, Washington 25, D. C.

Industry Can Profit

Purchasing Agents should find the great fund of information on proper packing, packaging, and materials handling compiled by the Navy of great value to them, for these specifications can be utilized to advantage in the movement of all materials.

The Navy has found that palletizing permits more rapid movement, reduces man-hours, reduces shipping costs (an important factor in the Navy's monthly freight bill of $40,000,000), utilizes maximum storage space, minimizes damage in transit, enhances employee safety, reduces time for taking physical inventory, minimizes pilferage, improves ventilation in storing perishables, simplifies vermin control, and greatly reduces the time in loading and unloading railroad cars, motor trucks and ships, thereby increasing their carrying capacity.

Similar advantages may accrue to private industry when the commerce of peace takes advantage of lessons taught by war's necessities.

BAUER & BLACK

Industrial Tape

PRESSURE SENSITIVE ADHESIVE

Heat resistant tape solves aviation engine problem

A famous maker of aviation engines is now making his own abrasive cartridges . . . using Bauer & Black Industrial Adhesive Tape. After long experimentation with many cements and tapes to find one that would withstand the tremendous frictional heat of removing burrs and rough edges from castings, Bauer & Black No. 228 Heat Activating Tape was selected.

After the tape is wrapped around the cartridge, the unit is baked to amalgamate the adhesive mass to the under layers of tape and with the outer abrasive layers to form a permanent bond.

The new method, made practical by a special Bauer & Black Industrial Adhesive Tape, is saving substantial sums annually and helping to speed engine production.

GUESSWORK COULDN'T HAVE WHIPPED THAT PROBLEM

There's no guesswork about selecting the *right* Bauer & Black tape for the job you want done.

Before we recommend *any* tape from our complete line, we dig into your specific problem. If necessary we will survey your plant . . . we run tests in our tape laboratory . . . *we find out*—beyond doubt—exactly *which* of our special tapes *will do your job.*

That system has been saving up to 45% on tape bills for many manufacturers . . . and *more* . . . it has cut production time and expense, smoothed out over-all plant operation and often has helped improve products.

If our system sounds good to you—call or write Dept. 210 and set up a date when a trained sales engineer may consult with you on your problems.

A Product of

BAUER & BLACK

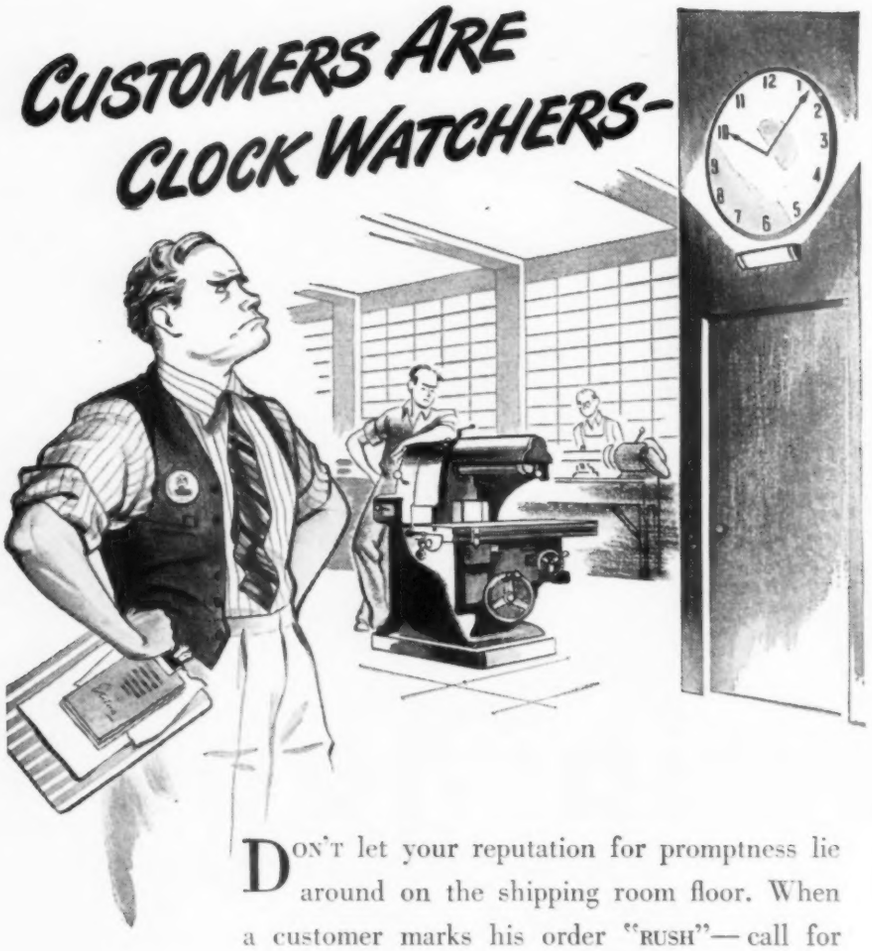
Division of The Kendall Company

2500 SOUTH DEARBORN ST., CHICAGO 16, ILLINOIS

RESEARCH TO SPEED AND IMPROVE METHODS . . . PRODUCTION SHORT CUTS TO REDUCE COSTS

★ ★ ★

CUSTOMERS ARE CLOCK WATCHERS—



DON'T let your reputation for promptness lie around on the shipping room floor. When a customer marks his order "RUSH"—call for AIR EXPRESS pick-up *and get it on its way as early in the day as possible!* That's the secret of fastest delivery by AIR EXPRESS—a service that moves cargo on swift Airlines schedules around the clock, for war and reconversion jobs.



SPECIFY AIR EXPRESS
A Money-Saving, High-Speed Tool for Every Business

With additional planes and space available for all types of traffic, 3-mile-a-minute Air Express directly serves hundreds of U.S. cities and scores of foreign countries. And shippers nationwide are now saving an average of more than 10% on Air Express charges—as a result of increased efficiency developed to meet wartime demands.

WRITE TODAY for "North, East, South, West"—an informative booklet that will stimulate the thinking of every executive. Dept. PR-10, Railway Express Agency, 230 Park Avenue, New York 17, N. Y., or ask for it at any local office.

AIR EXPRESS
Gets there FIRST

Phone RAILWAY EXPRESS AGENCY, AIR EXPRESS DIVISION
Representing the AIRLINES of the United States

West of the Rockies

(*Continued from page* 96)

The market for its natural products is already well established. For manufactured products, the limiting factor is the population West of the Rockies, of approximately six million people. It will continue to be a limiting factor unless enough efficiency in manufacture can be attained to capture Eastern markets. This, frankly, I doubt will happen in the immediate future, although in the stress of wartime procurement, some of our Western manufacturers have been able to supply assemblies to the East.

World War I brought many changes in our industrial organization. World War II promises to make many more. In this article I have tried to point out some of the trends of future production in the West without sounding like a local Chamber of Commerce representative. And I firmly believe that the post-war opportunity for outstanding contributions to business success by alert purchasing executives, whether they be in the East, West, North or South, is the greatest in the history of the United States.

* * *

Purchasing and Selling

(*Continued from page* 100)

He wants information on value, costs measured by performance and not by price.

He wants information on improvements and new developments, for such changes are the indicators of a progress that he wishes to share.

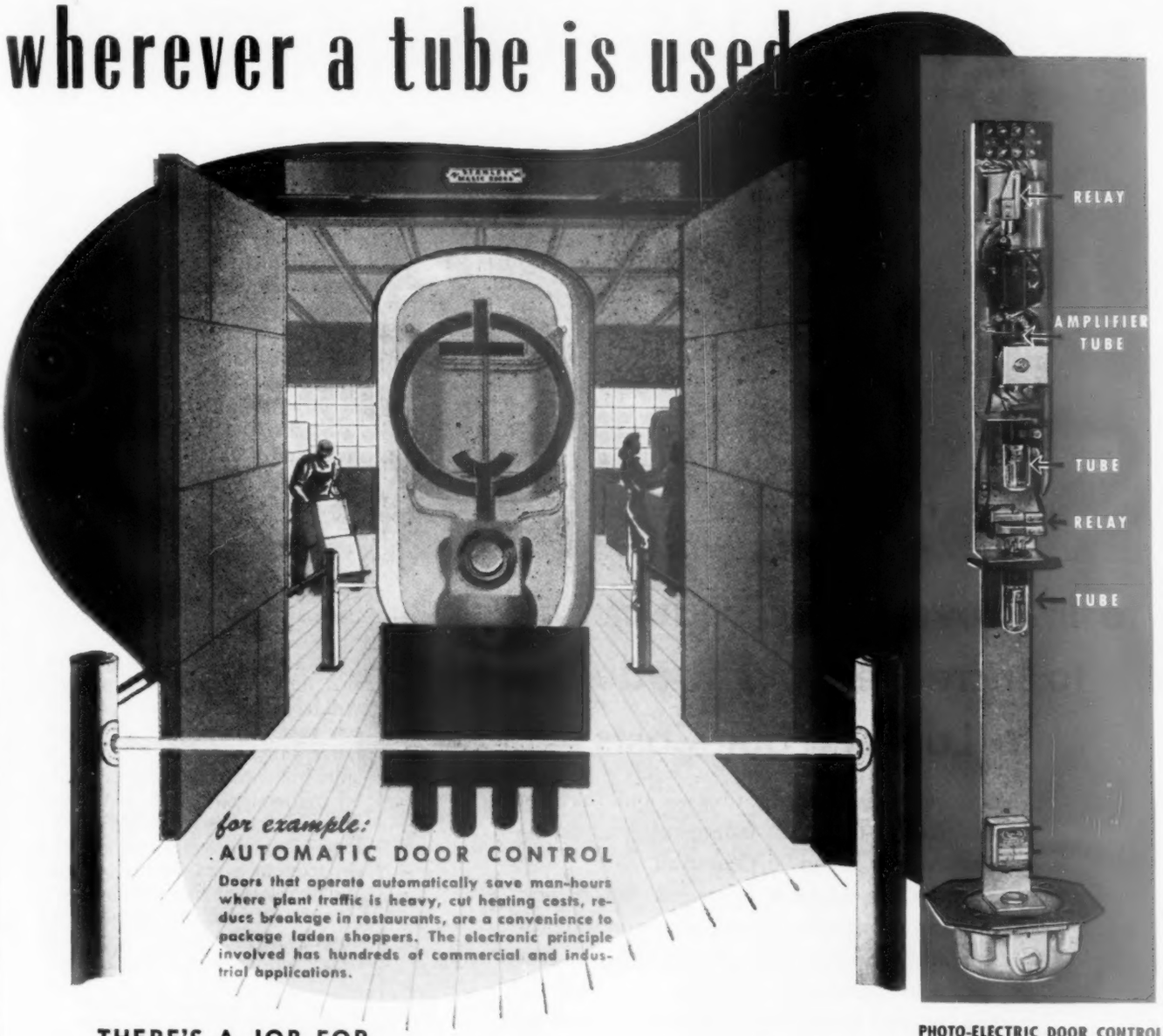
He wants the information complete, and in such form that it will be available for later reference as the problem and the solution are brought together.

Competitive Buying

It is important for the seller to remember, also, that while the Purchasing Agent is seeking the one best answer to his need, he is at the same time seeking to place himself in a competitive buying position. The two objectives are not inconsistent with each other, nor with the principle of loyalty to a reliable supplier. Both are essential to a sound buying program. Competitive buying does not necessarily mean that suppliers are being played against one another, though it does have its function in "keeping the seller honest". Equally important is that it

(*Continued on page* 318)

wherever a tube is used



for example:

AUTOMATIC DOOR CONTROL

Doors that operate automatically save man-hours where plant traffic is heavy, cut heating costs, reduce breakage in restaurants, are a convenience to package laden shoppers. The electronic principle involved has hundreds of commercial and industrial applications.

PHOTO-ELECTRIC DOOR CONTROL
Above unit manufactured by General Electric Co., is a part of STANLEY "MAGIC DOOR" CONTROLS.

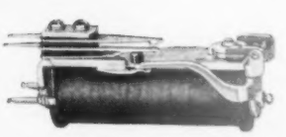
THERE'S A JOB FOR

Relays BY GUARDIAN

★ The "Magic Door" made by The Stanley Works of New Britain, Conn., uses a General Electric control unit which operates automatically at the approach of a pedestrian or vehicle. In this unit a beam of light focused on the cathode of a phototube causes a tiny current to flow. Enlarged through an amplifier tube this current operates a sensitive telephone type of relay such as the Guardian Series 405. Another phototube with an auxiliary relay, Guardian Series R-100, is employed to hold the doors open for anyone standing within the doorway.

The telephone type of relay is extremely sensitive and able to operate on the small current supplied through the electronic circuit. The auxiliary relay, Series R-100, is required to handle a greater current. It is a small, efficient relay having a contact capacity up to 1 KW at frequencies up to and including 28 megacycles. Contact combinations range up to double pole, double throw. Standard coils operate on 110 volts, 60 cycles, and draw approximately 7 V. A. Coils for other voltages are available. For further information write for Bulletin R-6.

Consult Guardian whenever a tube is used—*however*—Relays by Guardian are NOT limited to tube applications but are used wherever automatic control is desired for making, breaking, or changing the characteristics of electrical circuits.



Series 405 Telephone Type Relay



Series R-100 H. F. Relay

GUARDIAN ELECTRIC
1635-L W. WALNUT STREET CHICAGO 12, ILLINOIS
A COMPLETE LINE OF RELAYS SERVING AMERICAN WAR INDUSTRY

The CHAMPION LAMP WORKS



to Improve Your Products
to Increase Your Production
to Lower Your Costs

You need the best lighting — and the best lamps. 'Round-the-clock emergency production has proved that beyond all question.

CHAMPION's superbly equipped factory and engineering organization concentrates on the production and service of *Fluorescent* and Incandescent Lamps for industry.

CHAMPION's trained field men provide prompt and expert assistance on industrial lamp or lighting problems.

CHAMPION's efficient producing and distributing set-up assures lowest cost, lamp for lamp, lighting performance and quality considered. There is a competent and experienced supplier of Champion Lamps near by — ready to meet your particular lighting needs with intelligence and understanding.



CHAMPION LAMP WORKS
Lynn, Massachusetts
A DIVISION OF CONSOLIDATED ELECTRIC LAMP CO.

Purchasing and Selling

(*Continued from page* 316)

keeps the buyer out of a rut, and that it provides much needed insurance of supply, without any reflection upon the reliability of the vendor of his product.

Who knows when the most trusted supplier may suddenly be unable to make delivery because of a strike at his plant, or a fire, or the default of his own sources, or because transportaion lines have been temporarily disabled? These are hazards against which the buyer must be on guard.

So the measure of success in selling is not 100% of a buyer's requirements, but a reasonable share, with the incentive to make product and service so good that the share will be a healthy one. As a matter of fact, the vendor who gets 100% patronage is in a particularly vulnerable position as the target of all his competition. The Purchasing Agent, in selecting a supplier, tries to make sure that he is the type of supplier who will be in business a year, five years, ten years from now, for loyalty is not an abstract virtue; it brings results in continuity of supply and better understanding of requirements. Just so, the seller should take care that his contact in the purchasing department is reasonably permanent, and that is not likely to be the case if sound purchasing practices are not observed, especially in these times of heavy purchasing responsibility.

The Sales Interview

A final word is in order concerning the sales interview and what it may be expected to accomplish. Most such discussions degenerate into a gripe about the amount of time wasted in the outer lobby, waiting for the interview. Too little attention is paid to the time wasted in the interview itself, which should be productive time for both the buyer and the seller. And time wasted in the interview is one of the most potent causes of time spent in the waiting room.

There is no standard time which ought to be allotted to an interview; it should be as long, or as short, as is necessary to permit a full coverage of the subject under discussion. There is no standard time limit within which a caller must be seen, other than that it should be as short as possible consistent with the circumstances. Nobody wins when interviews are unduly hurried or cur-

(*Continued on page* 321)





THESE 19 DISTRIBUTORS HANDLE

BUCKEYE BEARINGS

to Serve You Better

● Buckeye's 1088 sizes of fully finished ready-to-use bearings,—156 sizes of semi-finished centered and rough machined maintenance bars, easily finished in a universal chuck,—and 256 sizes of rough bars, both in the popular 13" length introduced by Buckeye, that cut to size with a minimum of waste, are the proven answer to all but the most unusual industrial requirements. Regularly stocked by leading dealers in the outstanding industrial markets, these bearings reflect in every detail the advantage of Buckeye's exacting laboratory and metallurgical control, that assures the production of the uniformly high quality product. Each piece, month after month, measures up fully to Buckeye's exacting specifications. Send for the Buckeye stock cards and order Buckeye Bearings by name from the Buckeye distributors. A trial order will convince you.

Buckeye

BRASS AND MANUFACTURING COMPANY

BRONZESMITHS SINCE 1900

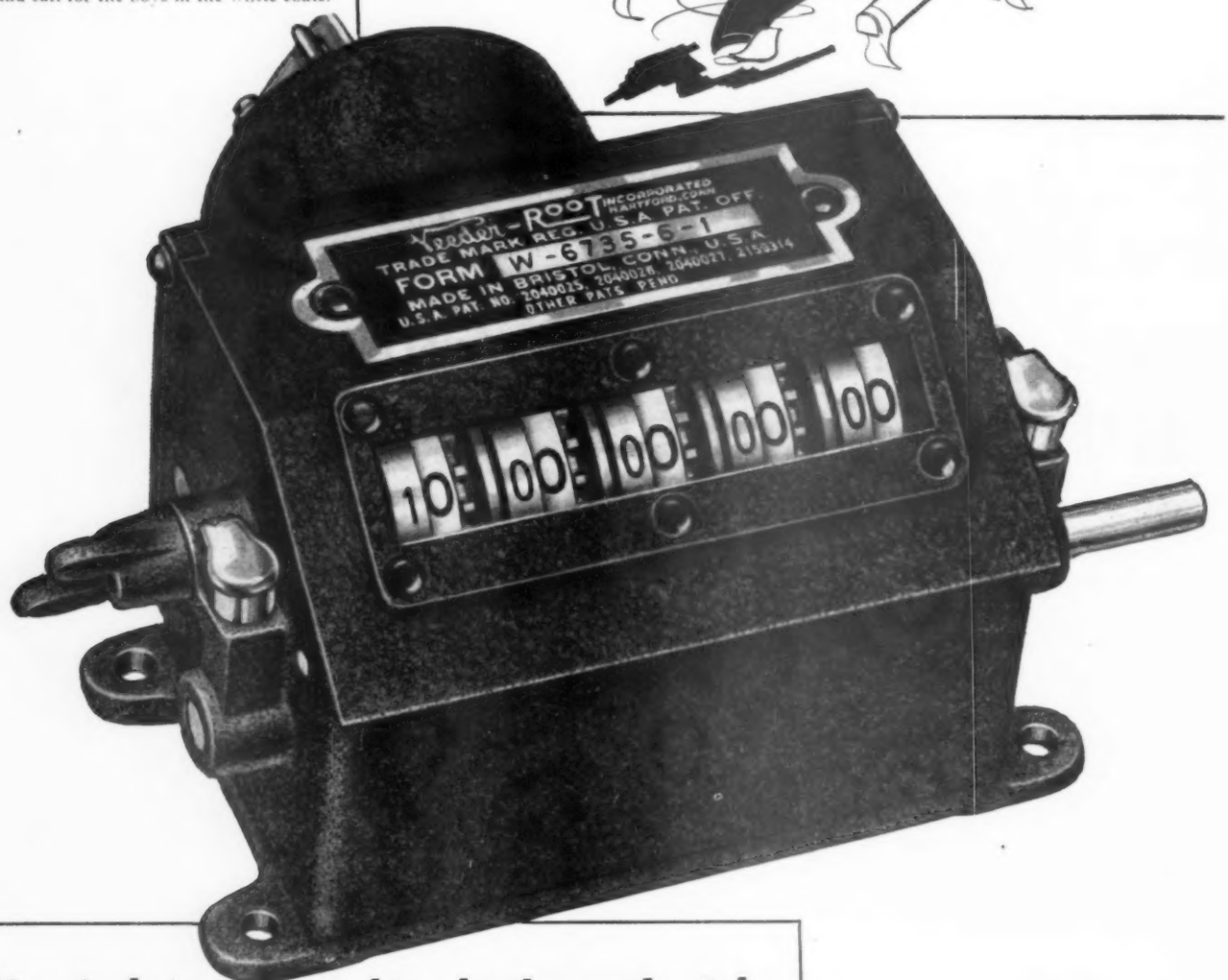
6412 HAWTHORNE AVE. CLEVELAND, OHIO

BRONZE SLEEVE BEARINGS · STANDARD SIZES OR TO CUSTOMERS' BLUEPRINT IN ANY RECOGNIZED BEARING METAL ANALYSIS

So WAR NERVES caught up with #681 — he couldn't guess-count on that high-speed run!

That coil-winder ran him ragged! No matter how he watched and tried to count, the machine would outguess him, and he'd shut it down only to find another overrun or another shortage. So they finally had to count him out, and call for the boys in the white coats.





Here's how to put him back on the job:

Equip that coil-winder with a Veeder-Root High-Speed Predetermining Counter . . . then all he'd have to do would be to set the predetermining wheels to the number of strokes, turns, or pieces required for the run . . . throw the starting switch . . . and forget it or do other work. At the end of the run the counter will signal him with a bell or light . . . or actuate a mechanism to stop the machine right on the button. No more anxious useless watching . . . no more "*war nerves*" . . . for No. 681. The counter shown is one of scores of types of Veeder-Root Devices which can be quickly and easily installed on any production machine or process, to count in any terms and units . . . and thus tighten control, prevent errors, delays and waste, *and make it easier for workers to do more work*. See what Veeder-Root "Countrol" can do *in your own plant*. Write to:

The Counting House of Industry

77204

VEEDER-ROOT
INCORPORATED
Hartford 2, Connecticut

In Canada: Veeder-Root of Canada, Ltd., Montreal
In England: Veeder-Root Ltd. (new address on request)

Purchasing and Selling

(*Continued from page* 318)

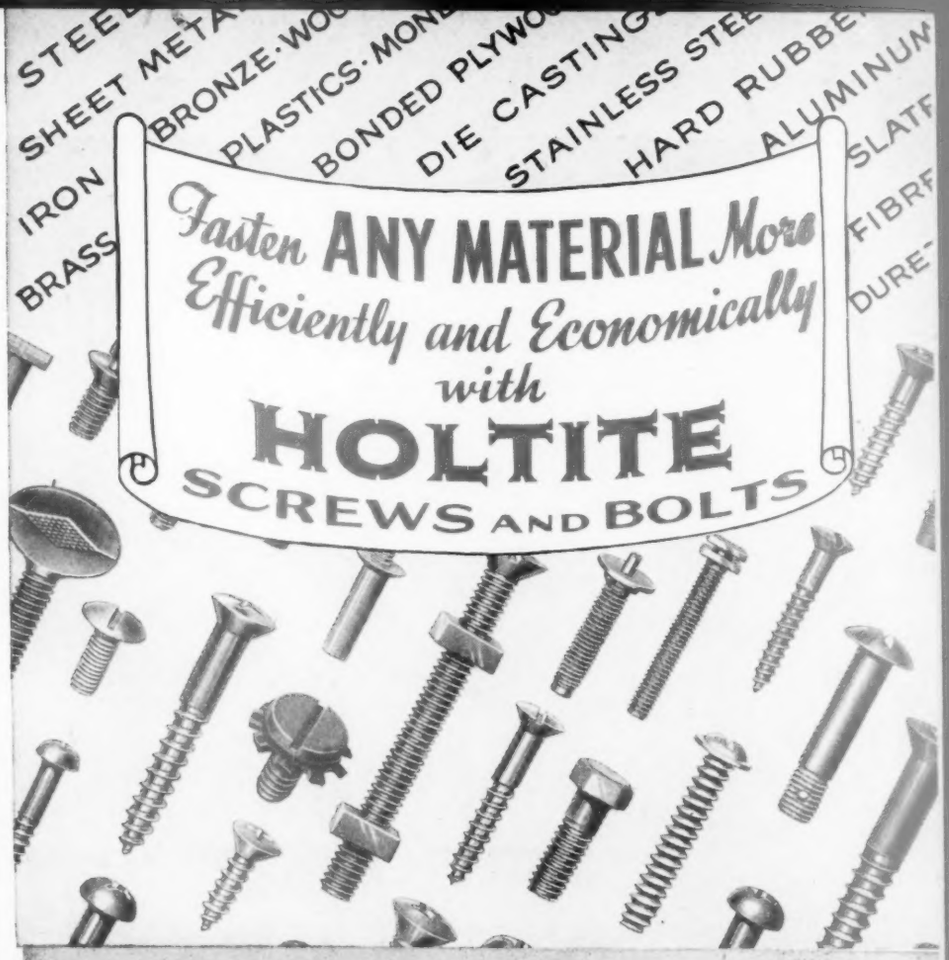
tailed to get at the next man in line.

Here are some authentic statistics culled from the carefully kept records of a metropolitan purchasing department, where four buyers participated in 23,563 sales interviews over the period of a year. That is an average of 86 interviews per working day, 21 per buyer. The average waiting time in this purchasing office was 4.6 minutes. The average interview lasted 10.9 minutes. The individual buyers, on the average spent 3¾ hours per day, or about half their time, in sales interviews. It should be noted in passing that the Purchasing Agent or buyer does have other duties beyond interviewing salesmen, and we are interested here about what happens in that other half of the buyer's time, as well.

It is reasonable to assume that not every sales caller went off with an order in his pocket, wrested from a buyer in a "successful" interview. But since we are dealing in averages, let us suppose that every salesman got his share of the business. Here is the significant feature of these statistics. This very department which interviewed 23,563 salesmen in the course of a year, issued 118,000 purchase orders over the same period, or 5.1 orders for each interview, and the average order in this company amounted to $237. In other words, the successful interview, while it may not have resulted in a direct order at the moment, presented a value and established a relationship that kept on working long after the interview itself was concluded, kept working during these other 3¾ hours when purchasing decisions are weighed and determined, and eventually resulted in 5.1 purchase orders amounting to more than $1,200. That is the way industrial purchasing operates, and the supplier who raises his sights to the greater objective does a superior service to the buyer and to himself.

There is a lot of money to be spent for industrial materials and equipment in this period of reconversion and post-war markets. It is a time that calls for the utmost in understanding and intelligent cooperation on the part of buyer and seller to make for mutual satisfaction and profit as industry enters this new and critical stage.

Address before the Power Transmission Council, New York City, Sept. 8, 1944



No matter how many problems and worries confront you concerning the kind of material best suited for fabrication in your reconversion to peacetime production—your FASTENING worries have already been eliminated for you!

Whether you use plastics, alloys, wood, steel, brass, bronze, aluminum, castings, hard rubber, or any other material, there is a HOLTITE product designed especially to fasten it efficiently and economically . . . finished to match any material.

When special fasteners will effect greater economies or improve assembling, we are completely equipped to produce Special Parts and Fastenings exact to specifications, blueprints or samples.

Wartime conservation makes it impossible to send catalogs unless requested on your company letterhead



HOLTITE-Phillips Recessed Head SCREWS & BOLTS

Recessed Head permits safe power driving to cut fastening time and costs in half. Stronger, neater job results—no spoilage, injuries, burred or broken heads.



Thread-Forming Sheet Metal Screws

Eliminate tapping operations — these hardened screws cut perfect mating threads as they are driven in sheet metal, plastics, castings. Tighter fit to defy vibration.

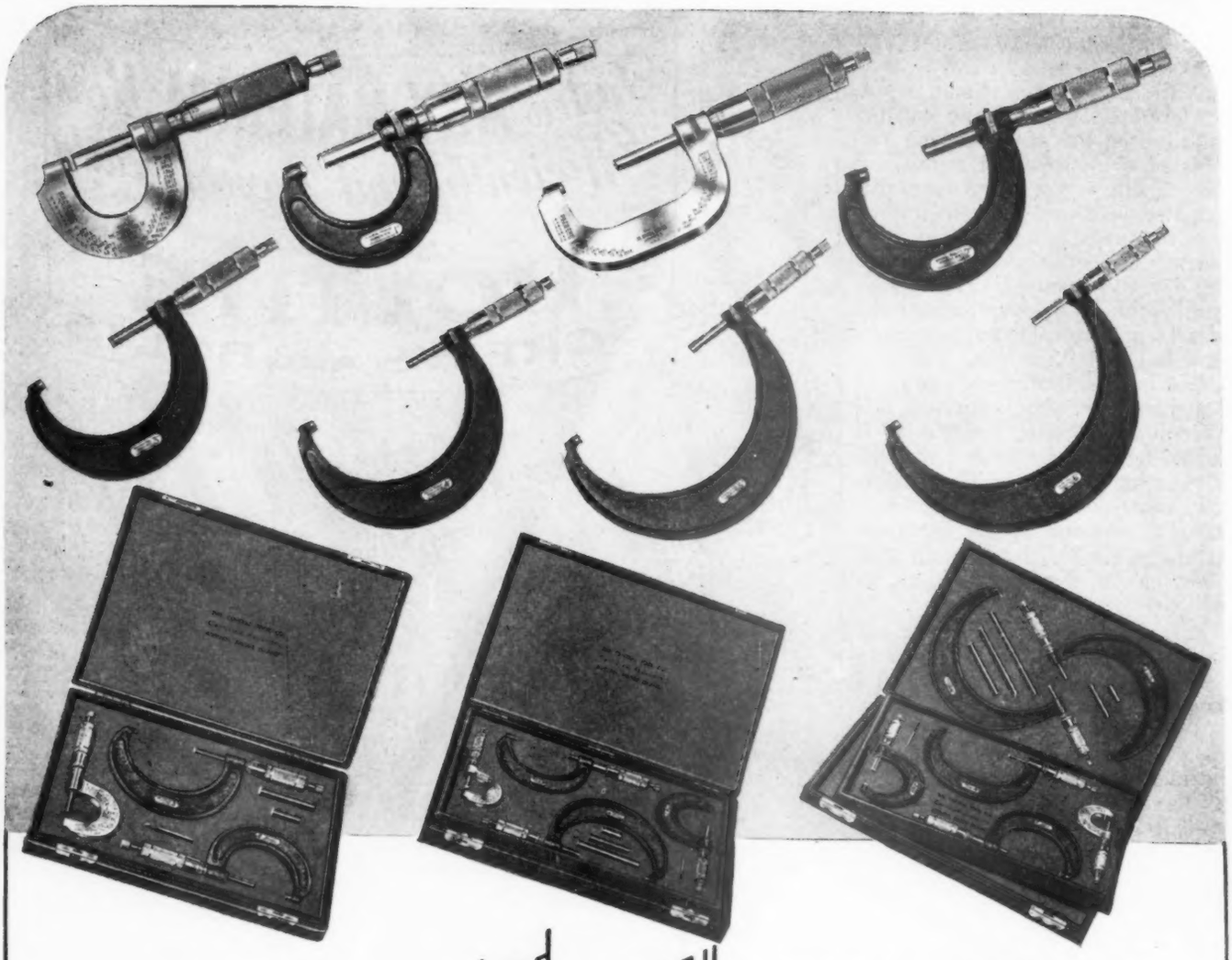


"Lock-Tite" Assembly Screws

The lock washer is an integral part of the screw — a HOLTITE fastening innovation that embodies in ONE UNIT more advantages than separate lock washer and screw assemblies.

CONTINENTAL SCREW CO. New Bedford, Mass., U.S.A.

BUY MORE BONDS



CENTRAL *Certified Accuracy* MICROMETERS

All frames forged of the finest special alloy steel ★ ★ ★ The new improved polished frame Micrometers in 1″ and 2″ sizes ★ ★ ★ The new black enamel finish Micrometers in all sizes from 1″ to 6″ ★ ★ ★ Also available with ratchet stop, lock nut and 10,000ths graduations ★ ★ ★ A full range of Metric Micrometers in addition to complete sets in leather covered cases—0″ to 3″, 0″ to 4″ and 0″ to 6″ ★ ★ ★

Immediate Delivery

WRITE TODAY FOR CATALOG No. 14



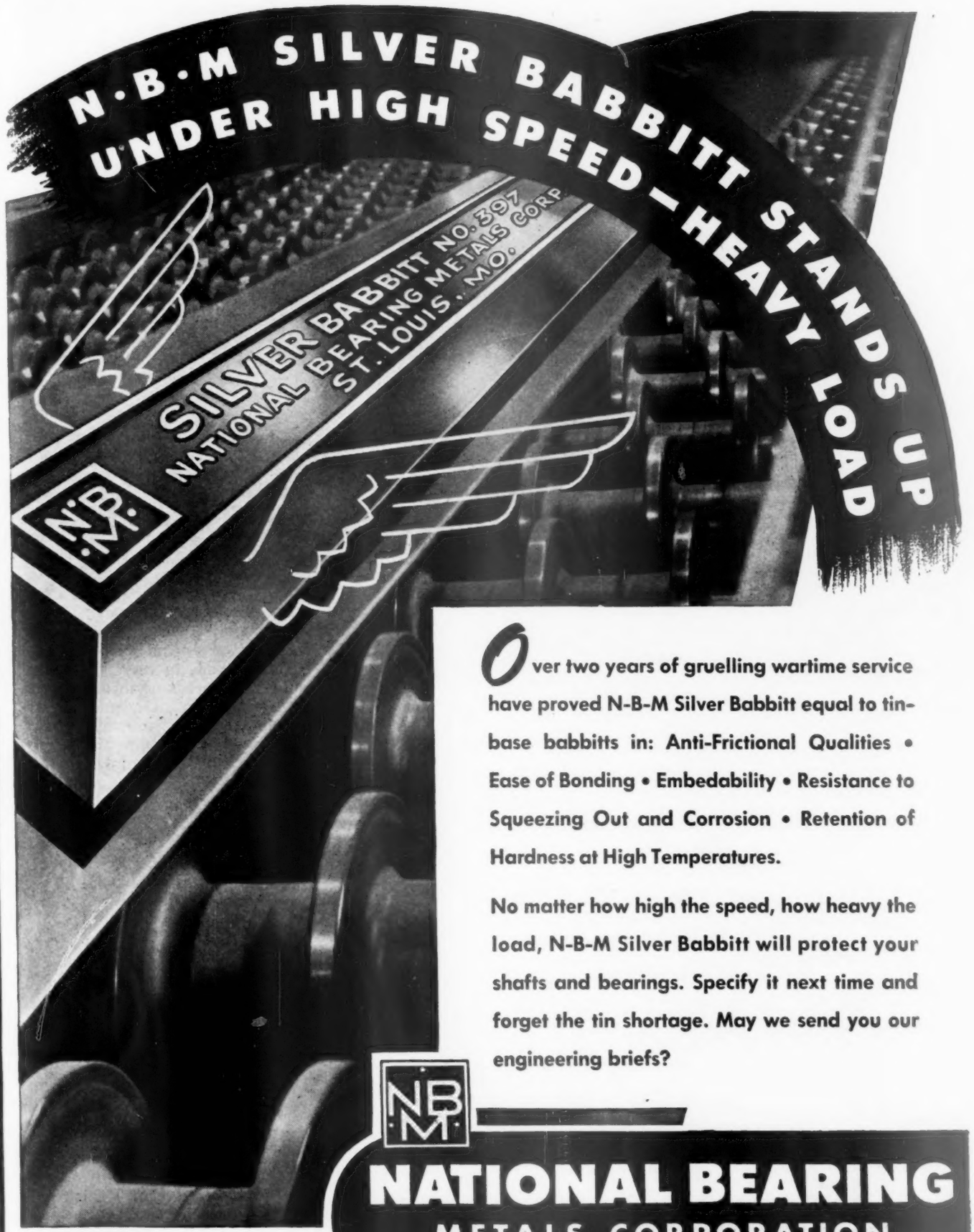
- The entire line of individual Micrometers and complete sets illustrated and fully described. Write today to The Central Tool Co., Auburn, Rhode Island.



THE CENTRAL TOOL CO.

Micrometers of Certified Accuracy

AUBURN · · · RHODE ISLAND



Over two years of gruelling wartime service have proved N-B-M Silver Babbitt equal to tin-base babbitts in: Anti-Frictional Qualities • Ease of Bonding • Embedability • Resistance to Squeezing Out and Corrosion • Retention of Hardness at High Temperatures.

No matter how high the speed, how heavy the load, N-B-M Silver Babbitt will protect your shafts and bearings. Specify it next time and forget the tin shortage. May we send you our engineering briefs?

N·B·M

NATIONAL BEARING
METALS CORPORATION
ST. LOUIS • NEW YORK

AMERICAN Brake Shoe COMPANY

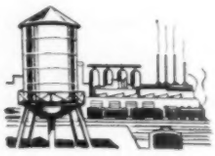
PLANTS IN: ST. LOUIS, MO. • PITTSBURGH, PA. • MEADVILLE, PA. • JERSEY CITY, N. J. • PORTSMOUTH, VA. • ST. PAUL, MINN. • CHICAGO, ILL.

VALDURA
Improved
ASPHALT PAINTS
For Heavy-Duty Maintenance—Use It Anywhere—On Any Surface—Indoors or Out—Above or Below Ground



Severe smoke, fume, moisture, weather, salt sea air, brine, acid and alkali conditions that quickly ruin ordinary paints have little effect on Valdura.

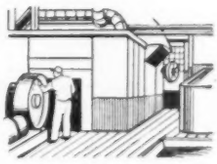
On stacks, tanks, bridges, marine equipment wherever surface protection is important tough, durable Valdura gives low cost, long-lasting service.





Under gruelling industrial conditions on metal, wood, concrete or canvas, Valdura's fume and fade resistant colors retain their glossy appearance.

The tough, elastic film withstands contraction and expansion caused by temperature extremes. Use it under hot, moist or freezing conditions—above or below ground.



VALDURA PAINTS THAT ENDURE

Write for Color Card showing how color can be practical in industry.

AMERICAN-MARIETTA COMPANY
Executive Offices
43 EAST OHIO STREET • CHICAGO 11, ILLINOIS

Complete Order System

(*Continued from page 76*)

operator whether these two forms will be required or if they may be omitted.

13. The first of these forms is the shipping memo, on which the price section is blocked out. It is sent to the shipping department, and when the equipment has been forwarded to the vendor, the memo is returned to the purchasing department for record purposes, showing the date when it was sent and the bill of lading number, signed by the shipping department.

14. The second of these special forms is a packing list, to be included with the shipment, and identifying it as covering "Billings & Spencer property as described in the above numbered purchase order, shipped to you under the terms of that order." Price and company information are both blocked out on this copy.

Thus the basic information concerning materials involved in any purchase, affecting all departments of the company—using department, accounting, receiving, and outside work, as well as purchase records, follow-up, and vendor's documents, has been made to serve the record and control needs of all phases at a single operation. Under these circumstances, the characterization of this system as "simple and exceptionally complete" is amply justified.

* * *

Public Relations For Purchasing

(*Continued from page 71*)

lease was mailed on June 28th to many of the present and past officers of the N. A. P. A. and of local associations, outlining some of our plans, and asking for suggestions.

The response was really amazing; so much so that it would be difficult to know where to begin, were it not that one theme was predominant throughout most of the replies. This was, that the first group we should seek to impress with the importance of Purchasing was Purchasing Agents themselves. As a group, we have seemed to feel that we have a vital job to do, one calling for a high degree of specialized knowledge, experience, and sound common sense. We perform our duties with-

(*Continued on page 326*)

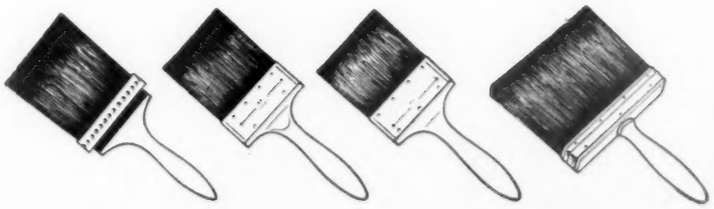
Another Job



NORTHERN ILLINOIS STATE COLLEGE • *Painted and Decorated by*—FLOYD WEYMER, *Contractor*, LINCOLN, ILL.

—*with* NEOCETA *Brushes*

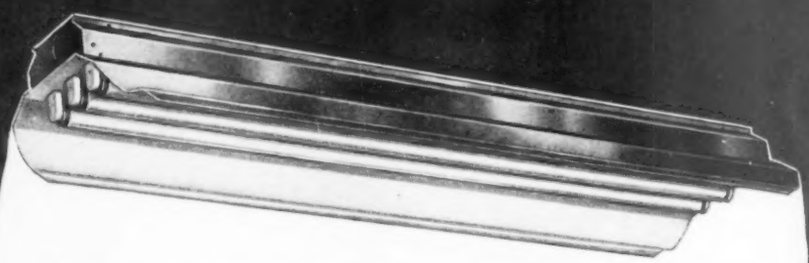
the proved new painting medium



PITTSBURGH
PLATE GLASS COMPANY

BRANCHES IN ALL PRINCIPAL CITIES—FACTORY AT BALTIMORE—29, MARYLAND

EQUIP YOUR PLANT WITH *Skilled Lighting* NOW!



In the light of wartime experience, progressive manufacturers have learned the vital importance of SKILLED LIGHTING to speed output and reduce accident. For better production *today* and better products *in peace time*, they are installing Wheeler-engineered fluorescent fixtures *now*.

This is especially true since Wheeler is back in production of the *all-steel unit* – highly-developed product of wartime research plus 63 years of lighting experience. Open-End *all steel* Fluorescent units are available for two 40-watt, three 40-watt and two 100-watt lamps. Units have a broad metal wiring channel, with easily-accessible, enclosed ballast. Can be mounted from chain or conduit, in individual or continuous runs. Messenger Cable, Rod, or Close-to-Ceiling Suspension fittings. Overall fixture efficiency of two 40-watt unit 80%, three 40-watt unit 74% and two 100-watt unit 71%.



ALL-STEEL DUST-TIGHT Fluorescent Fixture for Class II "Group G & F", and Class III and IV Hazardous Locations will prove as efficient and economical in peace time as it is in meeting wartime demands for SKILLED LIGHTING, where lamps, sockets and reflecting surfaces must be protected from dusts and vapors. Available for two or three 48-inch, 40-watt lamps.

These dependable units can be supplied with Double-Thick Plain Clear Glass, Water White Plate Glass or Tempered, Clear Safety Plate Glass, mounted in the hinged dust-tight cover.

• • •

These are but two examples of the high-efficiency light engineering – SKILLED LIGHTING – which Wheeler has developed to give maximum visual aid to workers. Write for full details on the complete line of fluorescent and incandescent fixtures. **Wheeler Reflector Company, 275 Congress St., Boston 10, Mass.** . . . New York, N. Y. Representatives in principal cities.

Distributed Exclusively Through Electrical Wholesalers

Wheeler REFLECTOR COMPANY

Lighting Equipment Specialists Since 1881

Public Relations For Purchasing

(*Continued from page* 324)

out fuss or fireworks, and are seemingly content to let it go at that, leaving it to others to present our achievements in their proper light.

Some of the most prominent men in the country have not hesitated to do this. We know the high opinions of purchasing, and those men engaged in it, by President Roosevelt in telegrams read at each of our national conventions. Donald Nelson has expressed publicly his belief that "Purchasing Agents are the most important business group in this country today." He has not failed to attend, and to address, each of our wartime conventions since he became head of W.P.B.

General Browning has stated that of $90,000,000,000 of war orders placed by the armed services of the United States, approximately $50,000,000,000 were actually allocated by the Purchasing Agents of prime contractors and sub-contractors. Could anything better illustrate the vital part which buyers are playing in the war effort of their country?

Despite the inconvenience of wartime travel, our convention programs resemble a rollcall of the important Government procurement and production officials. These men come from Washington to place their views before Purchasing Agents, and get the opinions of those buyers as to how procurement matters might best be handled.

These officials of Governmental departments and the armed services place particular stress on the highly important strategic position of the Purchasing Agent in the highly important matters of Contract Termination, Disposal and Redistribution of Surplus Property, and in other activities arising out of the termination of the war.

In view of all this, and of much more which might be added, who will deny that Purchasing occupies a position in the very forefront of present-day industrial and commercial activity? To gain a proper degree of recognition, we must seek to emulate those other professional groups, production, finance, engineering, sales, and research, who lose no opportunity of directing the attention of businessmen generally, and particularly those in their own individual corporations, to their achievements. There is no better time to commence doing this than RIGHT NOW.

STOP "CRAWLING"

Twin-Fast's parallel twin threads terminate at the axial center of the screw in a sharp, single, centered point—preventing "crawling."

At first pressure, Twin-Fast enters the material and drives straight — with a clean, cutting action. Eliminates "crawling" caused by the eccentric movement of the conventional, single thread, "gimlet point" screw. Twin-Fast tends to prevent misalignment of assemblies and assures neater fastenings at a saving in time, labor, and materials. Yet Twin-Fast Screws cost no more than ordinary wood screws!

We've an illustrated booklet and samples which we'll be glad to send you. Just drop us a line, *today*.

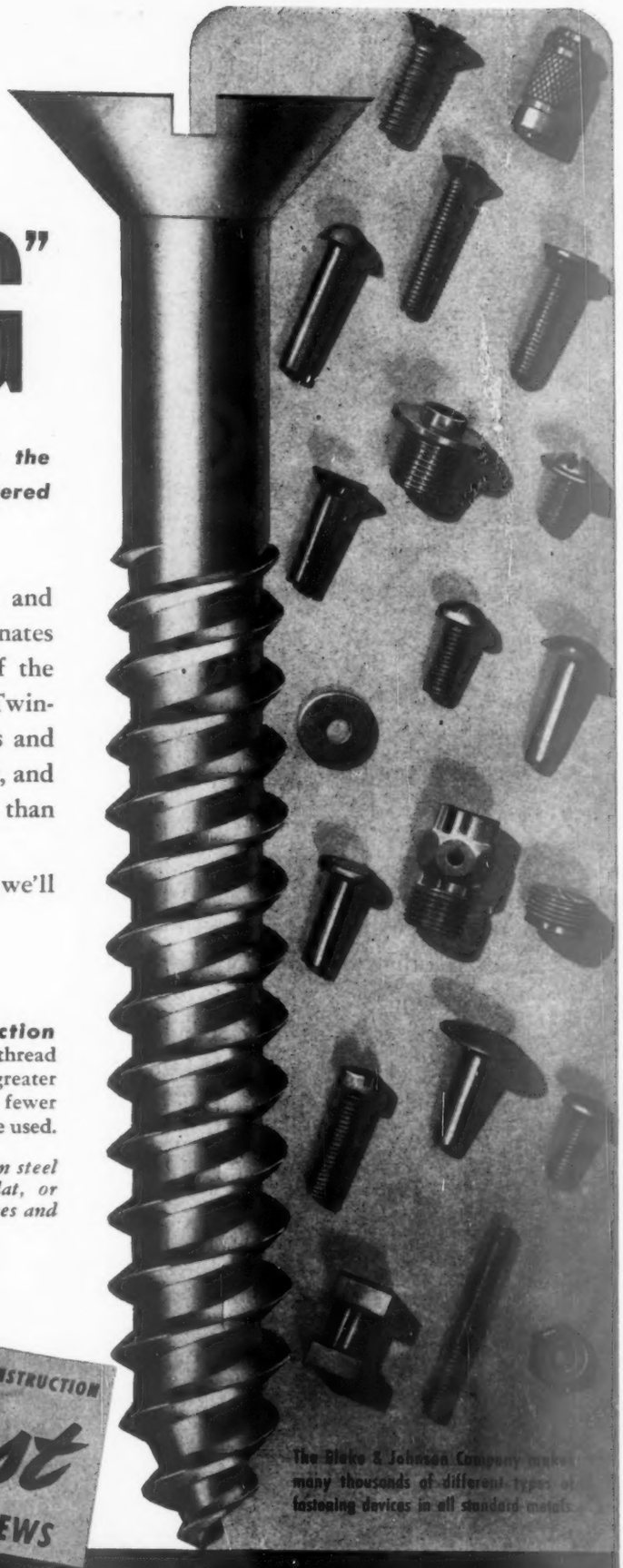
OTHER TWIN-FAST FEATURES

Twin, parallel threads provide twice the thread pitch of ordinary screws. *Driving time and costs are cut in half!*

Relieved shank diameter prevents stresses which might cause immediate or eventual splitting or fissures.

Cylindrical construction (not tapered) increases thread area for tighter seating, greater holding power. Often, fewer and shorter screws may be used.

Twin-Fast Screws come in steel or brass with round, flat, or oval heads – standard sizes and thread count.



BY ALL MEANS BUY BONDS!

FOR FASTER PRODUCTION—STRONGER CONSTRUCTION

TWIN fast

REG. U.S. PAT. OFF.

TWIN THREAD WOOD SCREWS

PATENTS 2,314,390; 2,314,391; OTHER PATS. PENDING

The Blake & Johnson Company makes many thousands of different types of fastening devices in all standard metals.

THE BLAKE & JOHNSON COMPANY SINCE 1849

WATERVILLE, CONNECTICUT



SAVING AMERICA TIME AND EFFORT

TO DEVELOP and use ways and means for saving time and effort is a typical American trait. Railway Express, with its fast trains coordinated with super-swift Air Express planes, is a time and effort-saving shipping service, unique in world transportation. These facilities, today, are being utilized to the utmost in meeting the fast transportation needs of government, industry and the public.

You can help Express continue to carry its share of today's enormous shipping load – and help yourself, too – by doing three simple things: Pack your shipments securely . . . address them clearly . . . get them off early. Out of our experience, we know "A shipment started right is halfway there."

RAILWAY EXPRESS AGENCY

NATION-WIDE RAIL-AIR SERVICE

CONTRACTORS RELIEVED FROM LIABILITY ON GOVERNMENT-OWNED PROPERTY

IT is the well established policy of the Government to self-insure against risks of loss or damage to its property. The War Department has property valued at many billions of dollars in the care, custody or control of contractors. In order to implement this policy, under which the Government self-insures its property, there is now included in the War Department Lump Sum or Unit Price Contracts an article on "Liability for Government-owned Property". This article relieves the contractor from liability for government-owned property which is furnished for use under such contracts.

This "Liability for Government-owned Property" article, reads in part as follows:

> (a)—the contractor shall not be liable for loss or destruction of or damage to property of the Government in the possession or control of the contractor with this contract (hereinafter called "Government property") (1) caused by any peril while the property is in transit off the contractor's premises, or (2) caused by any of the following perils while the property is on the contractor's or subcontractor's or other premises or by removal therefrom because of any of the following perils:
>
> Fire; lightning; windstrom, cyclone, tornado, hail; explosion; riot, riot attending a strike, civil commotion; vandalism and malicious mischief; aircraft or objects falling therefrom; vehicles running on land or tracks, excluding vehicles owned or operated by the contractor or any agent or employee of the contractor; smoke; sprinkler leakage; earthquake or volanic eruption, flood, meaning thereby rising of rivers or streams; enemy attack or any action taken by the military, naval or air forces of the United States in resisting enemy attack.
>
> The perils as set forth in (1) and (2) above are herinafter called "excepted perils."

With respect to Government property it is the desire of the War Department to eliminate the contractor's need for direct damage coverage as well as legal liability insurance against loss or damage caused by "excepted perils", and in this regard attention is invited to the following excerpt from War Department Procurement Regulations.

> The contract articles referred to are intended to put the contractor in the same position he would occupy if he obtained commercial insurance policies providing broad coverage against the "excepted perils" set forth in the contract article. In view of the protection thus afforded to the contractor by the Government in lieu of commercial insurance, the contractor has no liability for loss or destruction of or damage to Government-owned property caused by any "excepted peril" against which he may obtain commercial insurance, and the contractor is in fact required by the contract article to make the express representation (among others) that he is not maintaining and will not maintain insurance (including self-insurance funds or reserves) covering such liability.

It is believed that this definitive statement of the War Department will be of interest to War Department contractors and insurance companies and their agents.

* * *

SALE OF EXCESS STOCKS OF CONTROLLED MATERIALS

HOLDERS of idle and excess stocks of controlled materials are permitted to make special sales to persons who have been authorized to produce civilian goods under the "spot authorization" procedure, the War Production Board announces. This was done by issuing Direction No. 1 to Priorities Regulation No. 13.

Special sales are those made by a person who holds

(*Continued on page* 330)



Protect Your Workers' Eyes with the Proper Absorptive Lenses

Tremendous amounts of radiant energy . . . ultra-violet, infra-red and excessive visible light . . . are sent out from gas and electric welding and cutting operations, melting operations in steel mills, open furnaces, and molten metal in foundries. The amount of this radiant energy is far in excess of that which the unprotected human eye is able to accept without harm.

Because ultra-violet, infra-red and glare attack so insidiously, continuous exposure to them can be as dangerous to workers' eyes as flying steel.

For the protection of such workers, and other employees who may be occasionally exposed to these harmful light rays, Bausch & Lomb offers a complete series of absorptive lenses conforming in every way to strict Federal Bureau of Standards specifications. Each type is marked for easy identification to insure the worker using the proper lens. They are available in any type goggle mounting desired.

For complete information, write to Bausch & Lomb Optical Co., 741 St. Paul St., Rochester, N. Y.

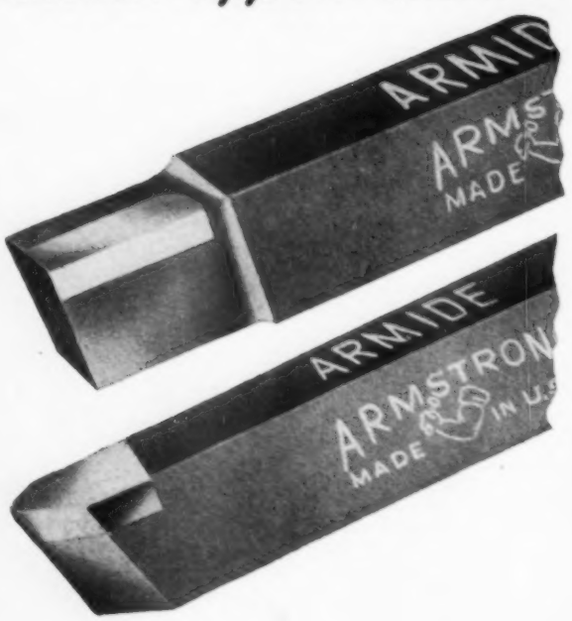


If you are a user of B&L Safety Eyewear, these forceful bulletin board posters (13¾ x 21¾) are available to help you promote your eye safety program. They carry a message your workers will heed and understand.

BAUSCH & LOMB *Safety Eyewear*

ARMSTRONG ARMIDE

Carbide Tipped Cutters



ARMIDE is a sintered-carbide cutting material which approaches the diamond in hardness. ARMIDE will machine the hardest and toughest steels and sand-filled castings with ease, as well as such heretofore "unmachineable" substances as hard rubber, plastics, and even glass. Because of the extreme hardness of ARMIDE, cutter bits tipped with this material will hold their cutting edge much longer than the finest tool steels and will machine from 10 to 100 times as many pieces between grindings.

ARMIDE-tipped CUTTERS offer special advantages on machining operations involving: (1) Long runs, (2) Sand-filled castings, (3) Tough alloy steels, (4) Machining of hardened parts without annealing and subsequent re-hardening, as in maintenance work, (5) High Speed Machining, (6) Machining of unusual materials.

ARMIDE Carbide Tipped Cutters are designed for use in ARMSTRONG Carbide TOOL HOLDERS. They come in two grades ARMIDE (Red) for machining steel, and ARMIDE (Grey) for machining cast iron, brass, bronze, aluminum and non-metallics. These grades of ARMIDE are distinguished by the corresponding color of the cutter-bit shank.

Both ARMIDE (Red) and ARMIDE (Grey) Cutter-Bits come ready-ground in four standard cutter shapes (illustrated below) namely: Right-Hand Turning, Left-Hand Turning, Square Nose Finishing 80° and Round point "V". Both ARMIDE (Red) and ARMIDE (Grey) cutter-bits come with either "Square" or "Heavy Duty" shanks. The shanks of "Square" cutters have a square cross section. The shanks of "Heavy Duty" cutters are deeper than they are wide in cross section, the added depth compensating for that part of the shank cut away to receive the ARMIDE tip.



Square L.H. R.H. 80°

ARMSTRONG BROS. TOOL CO.

"The Tool Holder People" 303 N. Francisco Ave., Chicago, U. S. A.

Eastern Warehouse & Sales: 199 Lafayette St., New York

(*Continued from page* 328)

idle or excess materials in a form in which he does not, as a general rule, sell them.

Persons authorized to produce civilian goods under the "spot authorization" procedure will be granted the right to use an allotment symbol, the initial letter of which will be "Z". Persons holding idle and excess stocks of controlled materials will be able to sell them to persons having such an allotment symbol.

The buyer need not charge controlled materials bought under the new rules against any Controlled Materials Plan allotment account, officials said. Special WPB permission is not required to make such a sale to a buyer who has been authorized to use a CMP allotment symbol whose initial letter is "Z".

Holders may also make special sales of non-controlled materials or products that may be sold to users on a rating of AA-5 if the buyer furnishes an order with a CMP allotment symbol bearing the initial letter "Z" granted him under PR 25, the "spot authorization" order, WPB officials said.

However, a production schedule authorized under PR 25 does not permit any person holding it to acquire materials or products that may not be purchased from idle and excess stocks without an AA-5 preference rating or without special WPB permission. In order to acquire such materials, the person holding the schedule must obtain the rating or get special WPB permission, officials added.

* * *

HEAVY DUTY TIRE SHORTAGE TO CONTINUE

WITH many trucks and buses down all over the country, the severe shortage of heavy-duty truck and bus tires for replacement purposes will continue through the fourth quarter of 1944 and a spread of the tire shortage to the smaller size truck tires is in prospect, according to Col. J. Monroe Johnson, director of the Office of Defense Transportation, said today.

Colonel Johnson said fourth-quarter tire allocations by the War Production Board for October, November and December were far below basic requirements on tires in sizes 8.25 x 20 and up. Because of this decision to satisfy expanded military requirements the WPB, in acting upon an ODT appeal from the unsatisfactory civilian allocation, increased the heavy-duty allotments only slightly and made a drastic cut in the smaller size truck tire allotments.

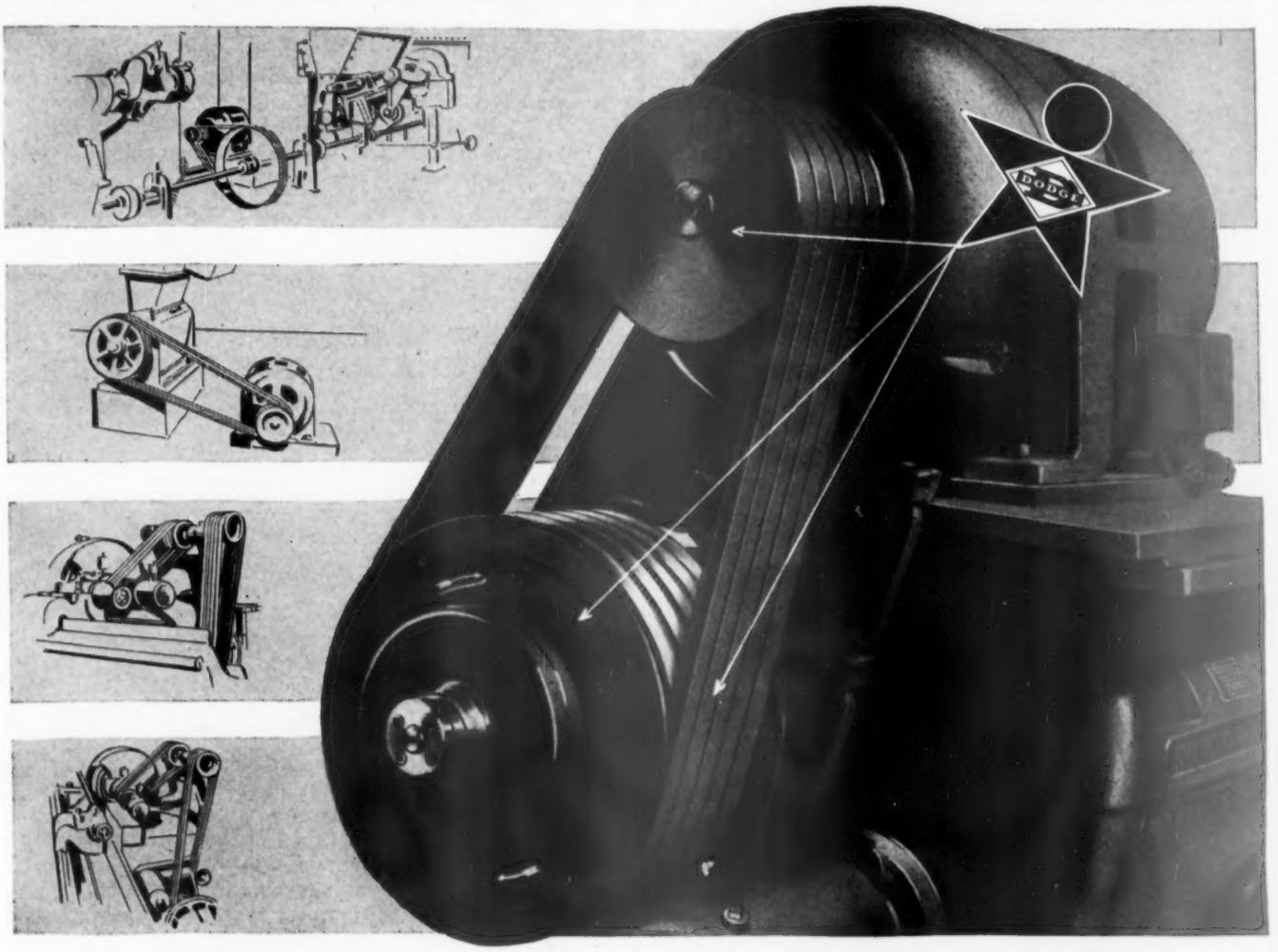
The allotment of tires for replacement purposes reflects drastic curtailment by ODT in its assignment of tires for new vehicles, the ODT director explained. The number of tires actually assigned for original equipment on new vehicles in the fourth-quarter is 206,056, which represents a 35.4 per cent decrease from the amount originally requested to meet the new vehicle program in full.

"Also, the volume of tires remaining for replacement purposes will permit rationing at the rate of only 96,832 tires in sizes 8.25 x 20 and larger per month, Colonel Johnson said. "This level is slightly more than one-half of the estimated requirements of 189,599 such tires needed to restore essential motor services to the approximate volume actually supplied during the first six months of 1944."

"The 96,832 heavy-duty tires that can be made available through the rationing system each month during the fourth quarter fail by a substantial margin to satisfy re-

(*Continued on page* 332)

TRANSMISSIONEERED MEANS ADVANCED DESIGN IN POWER DRIVES



Put the Dodge Transmission*eer* on your Staff

When it's a matter of putting power to work — all of it—it's a job for the Dodge Transmission*eer*. These specialists are graduates of a factory course in "transmission*eering*" who know how to solve power drive problems effectively and economically.

Transmission*eered* means advanced design in power drive equipment. Dodge Transmission*eers* work with a complete line of standardized and precision-built bearings, sheaves, pulleys, clutches and other drive components which insures "The Right Drive for Every Job".

Whether your problem is one of stepping up war production or planning for reconversion, the Dodge Transmission*eer* — your local Dodge distributor — can give you valuable counsel and, in many cases, supply your immediate needs from his local stock. Put him on your operating staff — his service is as close as your telephone.

DODGE MANUFACTURING CORPORATION
Mishawaka, Indiana, U. S. A.

BUY MORE WAR BONDS

DODGE

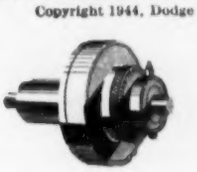
The Sign of the Dodge Transmissioneer

Copyright 1944, Dodge Manufacturing Corporation No. 17





The Right Drive for every Job





In Wartime, Too!

"U.S." IS BETTER



In wartime, as in peacetime, it is the *quality of making* in "U. S." Rubber Clothing and Footwear that gives workers the best buy. "U. S." Rubber is compounded to withstand tough wear, resist abrasion and cracking. Seams are vulcanized, 100% waterproof.



Makers of

"U.S." ROYAL FOOTWEAR

AND

"U. S." AMMOCURE RAYNSTERS

(Rain Clothing)

UNITED STATES RUBBER COMPANY

1230 Sixth Avenue • Rockefeller Center • New York 20, N. Y.

(Continued from page 330)

placement requirements of the services rated with top priorities 1 and 2 in the War Production Board and War Food Administration Essentiality List."

The ODT director said that after meeting new vehicle program needs, the fourth-quarter allotment of tires in the 7.50 x 20 and smaller sizes will provide 251,052 tires monthly in these sizes for replacement purposes or enough to supply only 72.7 per cent of the requirements of essential operators. These estimated requirements were placed at 345,272 tires monthly.

* * *

DEMURRAGE CHARGES ON REFRIGERATOR CARS RESTORED

COL. J. Monroe Johnson, Interstate Commerce Commissioner and director of the Office of Defense Transportation, announces that ICC Service Order No. 180, which provides penalties for holding railroad refrigerator cars beyond a reasonable time for unloading, will again become effective September 9.

Heavy seasonal movements of perishable freight at this time combine with the shortage of ice to constitute an emergency requiring the maximum use of all railroad refrigerator cars, in the opinion of the National Refrigerator Advisory Committee consisting of representatives of railroads, shippers, refrigerator car owners and the ODT.

ICC Service Order No. 180 established demurrage charges on any refrigerator car loaded with any commodity not unloaded within the 48 hours free time. After the free time, the charges are $2.20 a day for the first two days, $5.50 for the third day, $11 for the fourth day, $22 for the fifth day, and $44 for each succeeding day. These heavy demurrage charges are intended to make any holding of refrigerator cars for storage beyond five days too costly to be profitable.

Service Order No. 180 was originally recommended because delays in unloading refrigerator cars were seriously affecting the available supply of such cars for shippers, said Colonel Johnson. The order, originally scheduled to become effective February 11, 1943, was suspended to February 16; was effective from February 16 to April 6, and was suspended April 6 to August 5, and the suspension was continued to September 9.

* * *

PAPER INDUSTRY FACED WITH COMPLETE PRIORITY CONTROL

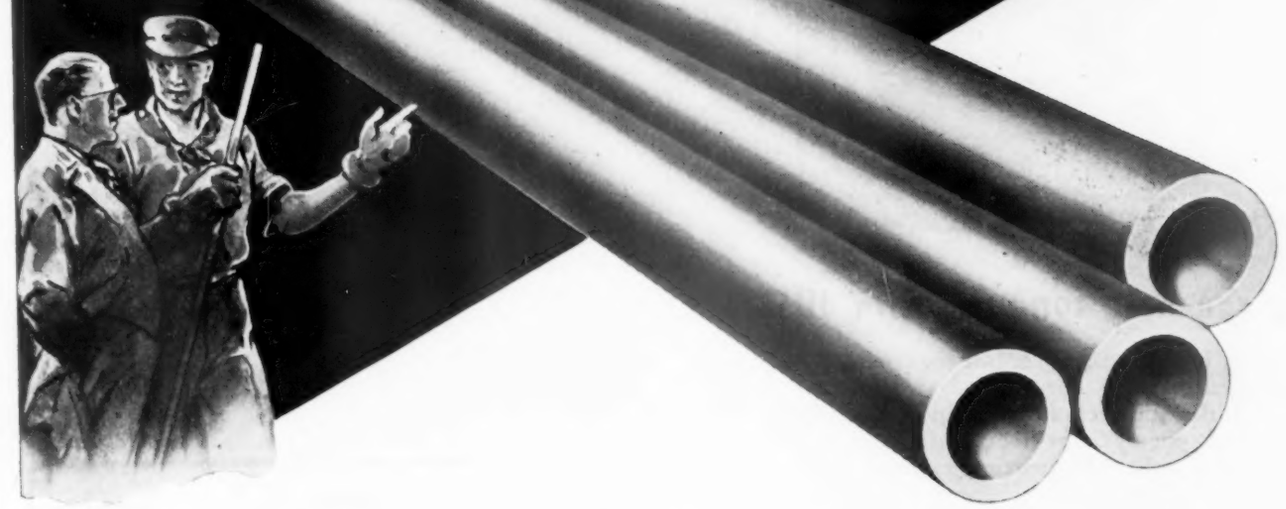
THE paper industry is faced with complete priority control of paper by the War Production Board, or will be subjected to over-all directives by the Army, unless the entire industry voluntarily cooperate in producing military and essential civilian papers, according to Rex W. Hovey, Director of the Paper Division, War Production Board.

Tighter control over both the production and usage of all printing and writing paper will have to be exercized by the government to ensure adequate supplies for both military and essential civilian requirements the three major segments of the printing paper industry were advised recently by officials of the War Production Board.

Members of the Industry Advisory Committees on Groundwood, Writing and Book Papers were told by

(Continued on page 334)

Here's Open-Hearth Alloy Tubing That Can't Be Beat



From long mastery of the art of making *good* open-hearth steel, plus new practices and experience given impetus by war demands, Pittsburgh Steel Company has developed the production of open-hearth *alloy steel* to a degree of perfection never before obtainable. When converted into Seamless Tubing the finished product is equal in quality to comparable grades made by other processes.

Sound steel plus the alloying "know-how," and complete uniformity of analysis, heat treatment and response, gives this *Pittsburgh Alloy Tubing* a utility range limited only by imagination. Wider use in aviation, automotive, marine, processing and other applications seems a certainty.

Demonstrating the high quality obtainable with these open-hearth alloys, orders for Pittsburgh Alloy Tubing to *Magnaflux specifications* have been filled without difficulty.

Send us your "specs" for analysis and recommendation.

PITTSBURGH STEEL COMPANY

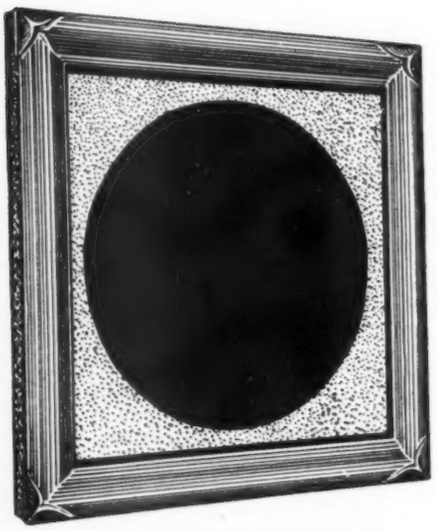
1693 GRANT BUILDING · PITTSBURGH 30, PA.

Pittsburgh ALLOY STEELS

Billets, Bars, Wire and Tubing

Also Carbon and Stainless Steels

Portrait of an ENEMY!



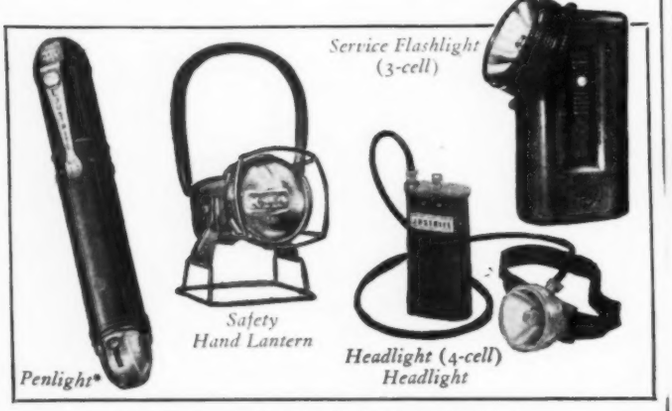
you can help conquer with JUSTRITE

One big battle today is against the commonest of foes . . . darkness.

And, the most effective weapon in fighting this dangerous enemy is brilliant, safe, dependable light . . . light like that of a Justrite Lantern.

In every industry . . . wherever there is a need for safe light . . . there is a need for Justrite, because Justrite Lanterns are designed to give the most and best light possible.

Look at this line of Lanterns . . . all made by Justrite . . . for safe, dependable, flick-of-the-switch light. See how they fit in your plant.



At present, the penlight is available for Army and Navy contract purposes only.

JUSTRITE MANUFACTURING COMPANY
2063 N. Southport Ave., Dept. B-2, Chicago 14, Ill.

JUSTRITE *Safety Products*
SAFETY CANS · FILLING CANS · OILY WASTE CANS
APPROVED SAFETY ELECTRIC LANTERNS

(*Continued from page 332*)

Harold Boeschenstein, Acting Director of the Forest Products Bureau, that the production of paper must be kept up and increased if possible.

Pointing out that the supply of raw materials, including pulpwood and waste paper, had been increased through co-operation with WPB of a number of branches of the industry and many volunteer groups, despite the handicaps of manpower shortages, Mr. Boeschenstein indicated that pulp and paper production had not been able to keep pace with the rapid increase in war requirements.

"We must avoid wishful thinking that the war is about over, and consider increasing demands for paper and non-paper products made from wood pulp," he said. "Military requirements for packaging of all kinds, as well as increased requirements for nitration pulp for explosives, special pulps for military tires and other military uses have increased appreciably with the tempo of the war. Demands for many special papers have also been stepped up."

DEVELOP CORK SUBSTITUTE FROM FARM WASTES

THE development of a new type of cork substitute that the Agricultural Research Administration says is the equal of cork discs used in bottling food and beverage products is announced by the Department of Agriculture. The substitute is made of pith and fibers from farm wastes, together with animal or vegetable glues and sugars, apple sirup or glycerine.

Scientists at the Department's Northern Regional Re-

(*Continued on page 336*)

TISSUE TIPS by VICTORIA



Specify VICTORIA TOILET TISSUES
Single Fold, Double Fold or Black Core—for dependable quality.
Victoria Paper Mills Co., Fulton, N.Y. Craftsmen in paper-making since 1880.

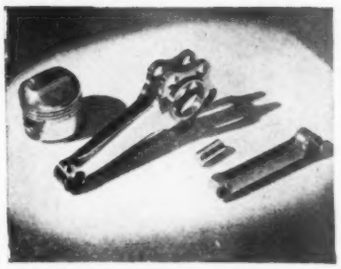
FASTER PRODUCTION

FOR LIGHT WEIGHT AUXILIARY MOTORS ALOFT and AFLOAT

Twenty times the speed of a previous operation in cylinder dome polishing . . . at least a six-fold time saving in finishing link rods.

—these results, achieved through the adoption of Brightboy Abrasives by a manufacturer of light weight auxiliary engines, are duplicated again and again when Brightboy is used for burring, finishing, and polishing. Brightboy eliminates the steps between the grind and the buff—frequently produces final polish.

Your dealer has Brightboy—and service information. Brightboy dealer representatives and service men will be glad to work with you on your production problems.



Brightboy—finished cylinder dome, connecting rod, wrist pin and link rod.



Left: Brightboy - polished cylinder dome; Right: dome before polishing.

BRIGHTBOY INDUSTRIAL DIVISION

Weldon Roberts Rubber Company, Newark 7, N. J.

WELDON ROBERTS

Brightboy

Vascoloy RAMET

T M REG U S PAT OFF

LEADING THE INDUSTRY IN CARBIDE TOOLS SINCE 1930

DIES

TANTUNG CUTTING TOOLS

VASCOLOY-RAMET CORPORATION

NORTH CHICAGO, ILLINOIS

DISTRICT SALES AND SERVICE IN PRINCIPAL CITIES

In Canada: Carbide Tool & Die Company Hamilton, Ontario

THE SUPERIOR TANTALUM-TUNGSTEN CARBIDE TOOLS

PAGE *Shaped* WIRE



ANY TIME you can use shaped wire to simplify manufacture, you cut your production costs. That's A B C.

What isn't always so obvious is just *how* you can eliminate costly operations by the use of shaped wire. And that's where **PAGE** comes into the picture.

The accumulated experience of many years is what **PAGE** offers you —along with the "know-how" of making every kind of wire and applying it to the manufacture of other products.

PAGE shaped wires are made in Carbon Steels, Armco Ingot Iron, Stainless Steels in end-sectional areas up to .250″ square and in widths up to ⅜ inches.

Let **PAGE** help you plan for efficient production.

PAGE STEEL AND WIRE DIVISION

Monessen, Pa., Atlanta, Chicago, Denver, Los Angeles, New York, Pittsburgh, Portland, San Francisco

AMERICAN CHAIN & CABLE COMPANY, INC.

BRIDGEPORT • CONNECTICUT

ACCO

In Business for Your Safety

HAMMOND VALVES

ARMY E NAVY

. . . fit the Job

A good valve built for reliable service at 125 lbs. working steam pressure has a place in industry, especially on original equipment where economy is an important consideration. It will pay you to investigate Hammond Valves for use on water, oil, air, vacuum or gas service up to 125 lbs. working steam pressure. The fine quality brass castings and precision finishing assure long life—the engineering experience of over 30 years in making valves assures a quality product. Thousands of Hammond Valves are now used on government specifications to "fit the job" and are giving excellent service. Hammond Valves are made in sizes from ¼" to 2" globe or gate type.



No. 600 Gate Valve

HAMMOND BRASS WORKS
HAMMOND, INDIANA

(Continued from page 334)

search Laboratory at Peoria, Illinois, where the research is under way in cooperation with the food and beverage bottling industries, attribute their success to a belief that if a product can be made mechanically similar to cork in structure, it would behave like cork in its resistance to compression. That proved to be the case. Pith particles alone often suggested for this purpose are not suitable because the air cells are much larger than those in cork, and the membranes much thinner. But by cutting pith into fine particles and incorporating these in a liquid composition that would set and harden to an elastic body, a product has been produced that closely duplicates the physical structure of cork. Farm crops with pith particles suitable for this purpose are sugarcane, cornstalks, peanut hulls, and similar material.

The new product has been given the name "NORESEAL" by combining parts of Northern and Regional with the word SEAL. It may be formed either as rods or sheet material, or poured in the liquid state and allowed to set in the metal caps used in bottling. It can be stamped or sliced into discs of suitable size.

Public announcement of this development has been withheld until practical plant tests covering all angles of use in the commercial bottling industry could be made. More than 7,000 of these tests have been run in 10 commercial plants, including storage tests ranging over a period of 6 months. The product is so promising that a large scale pilot plant is now under construction by a branch of the bottling industry to develop manufacturing procedures and costs.

Mimeographed Bulletin, AIC-44, NM-266, "Information on Noreseal, A New Cork Substitute", has been issued by Northern Regional Research Laboratory, Peoria, Ill.

(Continued on page 338)

New SURETY SELECTOR for INDUSTRIAL RUBBER GLOVES



A complete compilation of acids, chemicals, solvents, and other destructive elements, with appropriate type gloves to withstand conditions on every job.

A Time and Money Saver
FOR ALL INDUSTRIAL RUBBER GLOVE USERS

The first accurate guide to the correct type of rubber or synthetic glove for every requirement. Write on your company letterhead for free selector today.

Largest and Original Producers of Synthetic Gloves
THE Surety RUBBER COMPANY
CARROLLTON, OHIO

ANOTHER SPECIAL BY PROGRESSIVE

QUALITY PROMCO BRAND



ACTUAL SIZE

ENLARGED FOR DETAIL

71 other "specials" are illustrated in Catalog 18, which includes tables of weights per 1M standard pieces, dec. equivs. of fractions, etc. Write for it.

Special heads, threads, and finishes — on fastenings of any metal or alloy adapted to cold-upset — are Progressive's specialty. Weekly output: 25,000,000.

The PROGRESSIVE MFG. CO.
42 NORWOOD ST., TORRINGTON, CONN.

BUY MORE WAR BONDS

WHAT IS THE
4th
DIMENSION
in Springs
?

— those hard-to-dig-out factors which insure our giving you . . . not merely the spring you ordered . . . but the PERFORMANCE you WANT.

LEE SPRING CO., INC.
30 MAIN ST., BROOKLYN, N. Y.

Ask About SCIENTECH Spring Service

DON'T WORK IN THE WET!



Sawyer's
PROTECTIVE
WORK CLOTHING



Frog Brand Work Clothing by Sawyer is built to protect men from moisture — from nature outdoors or from industrial conditions indoors. Though production is still limited because of war conditions and obligations, it pays to look for the Frog Brand trademark if your work is "in the wet"

THE H. M. SAWYER & SON CO.
East Cambridge, Mass.

SANDBLAST BARRAGE

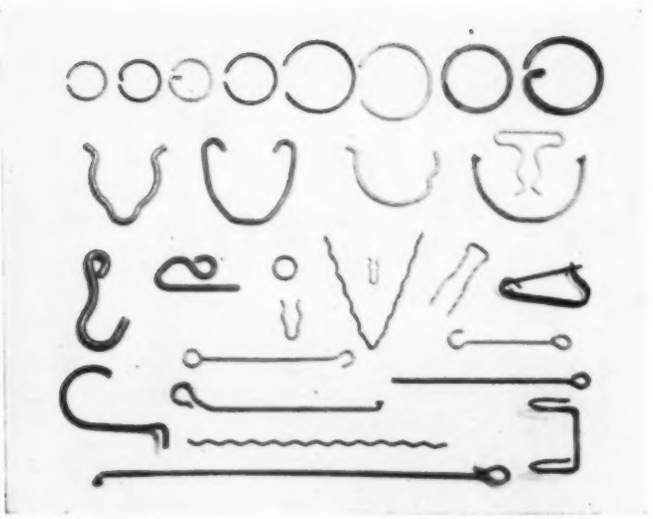


that INCREASES PRODUCTION

Parsons
SAND BLAST CABINETS

Parsons Sandblast Cabinets are small and compact, yet they pack a tremendous punch, cleaning metal parts, intricately shaped which could not be handled in bulk. Operation is so simple that anyone without experience may use it. Operates on pressure from 20 pounds up, and will handle either sand or steel abrasives. Illustration shows Parblast Cabinet and dust filter, each of which can be furnished separately. Send for free bulletin on Parblast Cabinets.

PARSONS Engineering CORP.
2545 EAST 79th STREET • CLEVELAND, OHIO



Yes - WE MAKE

WIRE FORMS

Reliable

We are well equipped, with modern machinery and expert craftsmen, for the economical production of wire forms from standard steel wire, spring steel, or other materials. Reliable serves best wherever special accuracy and precision are required. By the use of multi-purpose jigs, we can often supply your exact needs, even intricate designs, without tool costs. From a background of long experience, we can apply to your wire form requirements a degree of skill and ingenuity you may not find elsewhere.

We are large volume producers of springs, stampings, and wire forms—yet our organization is so built that it is possible for you to have direct contact with competent key executives, on your problem, and get attention and *action*.

It's worth while to consult Reliable.
Catalog 44 sent on request.

THE RELIABLE SPRING & WIRE FORMS CO.
3167 Fulton Rd. Cleveland 9, Ohio

Representatives in Principal Cities

YOU CAN RELY ON
Reliable Springs
ROUND AND FLAT WIRE SPRINGS
CLIPS HOOKS BENDS
LIGHT STAMPINGS

LUMINESCENT COATINGS

THE widespread use of luminescent coatings indicates a definite value for these finishes in many and diverse post-war fields says *Paint Progress*. When the demand by our Armed Forces for such things as luminous maps, luminous airplane dials and luminous direction markers eases off, we may well see new and novel peacetime applications which in time will exceed the present war consumption of these finishes by a wide margin.

The two types of luminescent coatings in use today are known as fluorescent and phosphorescent. The fluorescent is the one which must be activated by a form of ultraviolet light. This coating has no useful afterglow. Phosphorescent coatings need only ordinary light for activation and have a useful afterglow from two to twelve hours or more.



Upper picture shows luminescent factory identification sign in the day time and the lower shows the same sign it appears in complete darkness.



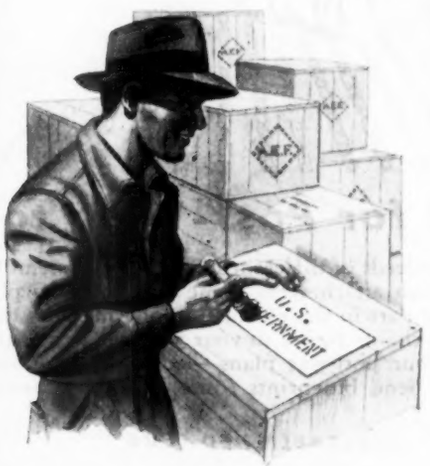
The pigments used in the manufacture of luminescent coatings are zinc sulfide, cadmium sulfide, calcium sulfide and strontium sulfide, specially processed to produce the desired fluorescent or phosphorescent properties.

Among the interesting war uses for these materials, perhaps the one accounting for the largest tonnage is military map and chart printing, which employs the fluorescent type pigments. These are used by airplane

(*Continued on page* 341)

SPEED SHIPMENTS TO ALL FRONTS

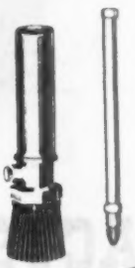




YOUR SHIPMENTS ARE IMPORTANT

CLEAR—EASILY READ—PERMANENT STENCILED ADDRESSED SHIPMENTS move thru the Shipping Room faster and are speeded all along in transit.

DIAGRAPH-BRADLEY FOUNTAIN STENCIL BRUSH —features: button type ink control—ink capacity for 1,200 to 1,500 addresses—positively will not flood, clog, smear, or leak—replaceable bristle tip—non-breakable leak-proof end.



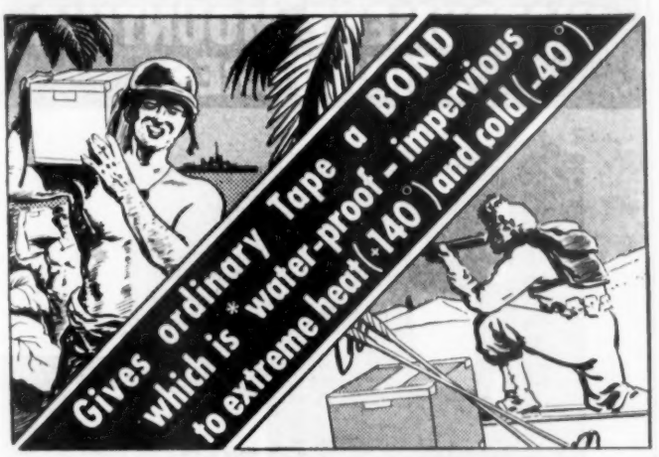
DIAGRAPH-BRADLEY FOUNTAIN MARKING PENCIL —a leak-proof non-clogging marking pencil for use wherever a marking pencil is required.

COMPLETE SHIPPING ROOM SUPPLIES

FOR BEST RESULTS USE:
- D-B FOUNTAIN STENCIL BRUSHES
- D-B STENCIL CUTTING MACHINES
- D-B INKS
- D-B STENCIL BOARDS
- D-B FOUNTAIN MARKING PENCILS

D-B. DIAGRAPH-BRADLEY
STENCIL MACHINES
DIAGRAPH-BRADLEY STENCIL MACHINE CORPORATION
NO. 47 DIAGRAPH BRADLEY BUILDING
ST. LOUIS, 8, MISSOURI
DISTRIBUTORS IN PRINCIPAL CITIES

WORLD'S OLDEST AND LARGEST MANUFACTURER OF STENCIL MACHINES



Most Important Development in the History of Tape!

Products of high moisture content, products packaged for freezing or cold storage, or to be sent to severe climates can now be sealed with ordinary tape using Tanglefoot "W-51" Solvent. Applied with regular equipment It is non-corrosive. Works equally well with Solseal and Windsor type waterproof tapes Sets harder and faster, is more economical. Tape users everywhere are turning to this remarkable new discovery. Write for sample and name of nearest dealer, NOW!

* Water-proof is a term commonly used to indicate a water-resistant material or product.

TANGLEFOOT *Solvent* "W-51"
The Tanglefoot Co., 401 Straight Street, S. W., Grand Rapids, Mich.

Materials
PROCESSING EQUIPMENT

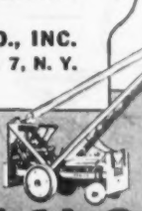




Sifters, Crushers, Cutters, Dry and Liquid Mixers, Mills, Grinders, Pulverizers, Conveyor Systems, Complete Installations.

The handling equipment construction "know-how" of the Mercer Engineering Works, Inc., Clifton, N. J. . . . The more than 40 years processing equipment experience of Robinson Mfg. Co., Muncy, Pa. . . . All are embodied in and represented by

MERCER-ROBINSON, CO., INC.
30 CHURCH ST., NEW YORK 7, N. Y.



Materials
HANDLING EQUIPMENT





Trailer Trucks (All Types) Wheel Tractor Cranes (3 to 7 ton) Fork Lift Trucks, Lift Platforms, Hoists, Live Skids, Wheels, Casters.



FACTS *and* FIGURES *about* FITTINGS

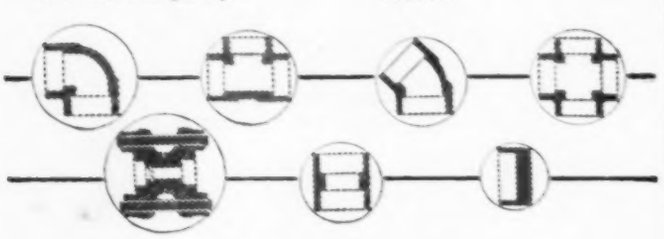
48 pages of useful data... yours for the asking!

Information wanted on pipe fittings? Watson-Stillman has the answer in Catalog A-3, which gives you more than 40 pages of factual data on FORGED STEEL SCREWED END AND SOCKET WELDING FITTINGS. Includes photographs... diagrammatic drawings... pressure ratings ..dimension tables... excerpts from piping codes... engineering tables... stress calculations... specifications... pressure and temperature charts... pipe thread dimension tables... fillet weld calculating data... steel pipe data.

The Watson-Stillman line includes all types of fittings for standard, extra-heavy and double extra-heavy pipe lines for high pressure, high temperature service in refineries, oil fields, chemical plants, ship construction, air conditioning and refrigeration, power plants and hydraulic installations. They assure low material and maintenance cost. The Double Diamond trademark is your guarantee. The Watson-Stillman Company, Roselle, New Jersey.

MORE FACTS . . . MORE FIGURES

To round out Watson-Stillman service four additional booklets are also available – full of factual data on Valves, Pumps, Jacks and Wire Rope Shears, four groups of products for use on construction and maintenance jobs; in oil fields and chemical plants; in arsenals and shipyards. Send for any one or all of these booklets.



WATSON-STILLMAN

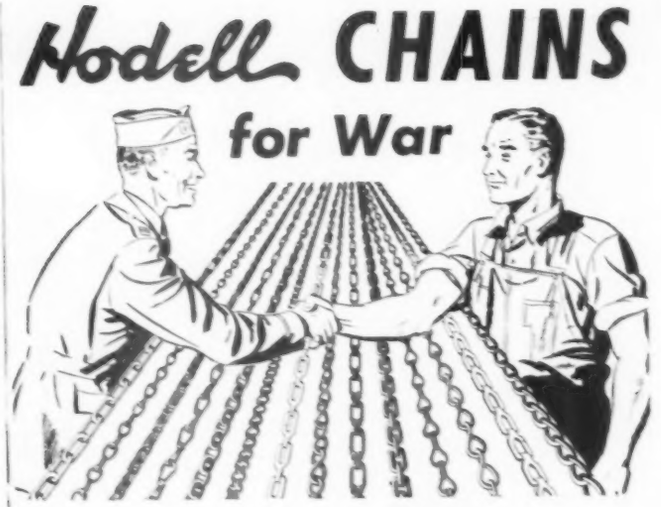
Distributor Products Division

Engineers and Manufacturers of Forged Steel Fittings, Valves, Wire Rope Shears, Pumps, Jacks, and Hydraulic Machinery and Equipment

FITTINGS • VALVES • WIRE ROPE SHEARS • PUMPS • JACKS • Sold Through Leading Distributors

6048

Hodell CHAINS for War



–and for Post-War, too!

Today hundreds of different Hodell chain assemblies —some with attachments, some without—are playing a vital part in the production of America's tools of war. If chains figure in your wartime production —or in your post-war plans—let Hodell engineers help you. Send blueprints for a prompt estimate.

ESTABLISHED 1886

THE HODELL CHAIN CO.

CLEVELAND 3, OHIO

INSTRUMENT MOUNTING STRUCTURES



Littleford Fabricating Engineers are skilled in precision fabrication of instrument mounting structures for recording and control elements. In addition, these Engineers know how to give structural strength and appearance when forming each unit. If steel cubicles, desk type control units, bench boards, or special enclosing structures are needed, let Littleford Engineers be of service.



LITTLEFORD

LITTLEFORD BROS., INC.

446 E. Pearl St., Cincinnati 2, Ohio

(Continued from page 338)

pilots and bombardiers, P-T boat pilots, or by the many machinery operators where visibility may be required without the use of normal light sources. Such materials are activated by a light source rich in near-ultraviolet radiation, but containing very little visible energy. This means that the airplane pilot, for instance, can have illumination for his map without using light which would be visible to an enemy plane.

From the post-war standpoint, however, the phosphorescent pigments probably are of greater interest These maerials, besides being activated by the common light sources, also possess the useful afterglow characteristics—two properties that make for wider adaptation to practical uses.

Post-War Applications

1. *Advertising and Graphic Arts* — for processing of artwork, billboards, displays, signs, printed matter by letter press, lithography, offset, silk-screen or decalcomanias, or artists' colors, crayons or chalks.
2. *Architectural and Interior Decoration* — murals, decorative designs and ornaments, drapes and curtains, costume effects in theatres, restaurants, night clubs, beauty salons, retail and department stores, commercial and public buildings.
3. *Photo-Templet Reproductions*—without a camera, of drawings or layouts for "lofting" airplane, automotive, and other industrial parts.
4. *Safety Papers* — for detection of alteration and erasure of bank notes, tax stamps, licenses, official credentials, membership cards and identification.
5. *Industrial Applications* — dials and instrument panels, directional and identification signs, light reflectors, painting as an aid to lighting, street numbers, name plates and trade marks.
6. *Transportation* — railroad markers, Pullman car directional signs, Club car decorative and lighting effects, shipboard and yacht markers, signs.
7. *Commercial and Home Consumption* — radio and television dials, light reflectors, table decorations, flowers, ornaments, ashtrays, novelties, menu cards and name-plate markers, switch and bell-button plates, jewelry, Christmas tree ornaments, dresser sets, cigarette cases, powder and rouge compacts, purse trimmings, belt and shoe buckles, decorative wall paper, and house and office paints as aids to more efficient lighting.

* * *

SYNTHETIC PLANTS SET "CEILING" FOR RUBBER INDUSTRY

AMERICA'S war-born $750,000,000 synthetic rubber plant may "pay for itself" within four years after Far East rubber plantations resume normal operations, according to James J. Newman of Akron, O., vice-president of The B. F. Goodrich Company.

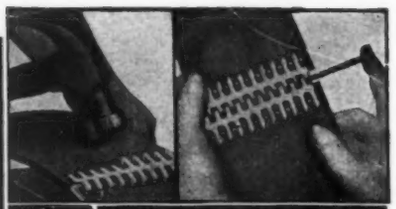
Consistently lower rubber prices—for either the synthetic or natural varieties, or both—conceivably could save this country $190,000,000 a year, which in four years would compensate fully for the wartime outlay, Newman said, "with continuing 'plus' savings thereafter." The annual saving is computed, he said, on the basis of a raw material cost 10 cents a pound lower than it would be without the influence of synthetic, and on an average annual consumption of 850,000 tons.

Whether synthetic or natural becomes the "dominant" postwar rubber, Newman explained, the "ceiling

(Continued on page 342)



BELT LACING and FASTENERS for transmission and conveyor belts



"JUST A HAMMER TO APPLY IT"

ALLIGATOR
Trade Mark Reg. U. S. Pat. Office
STEEL BELT LACING

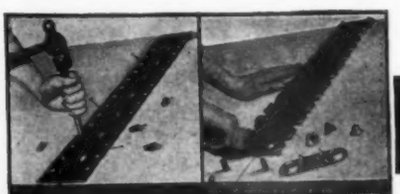
World famed in general service for strength and long life. A flexible steel-hinged joint, smooth on both sides. 12 sizes. Made in steel, "Monel Metal" and non-magnetic alloys. Long lengths supplied if needed. Bulletin A-60 gives complete details.

FLEXCO HD
BELT FASTENERS AND RIP PLATES

For conveyor and elevator belts of all thicknesses, makes a tight butt joint of great strength and durability. Compresses belt ends between toothed cupped plates. Templates and FLEXCO Clips speed application. 6 sizes. Made in steel, "Monel Metal", non-magnetic and abrasion resisting alloys.

By using Flexco HD Rip Plates, damaged conveyor belting can be returned to satisfactory service. The extra length gives a long grip on edges of rip or patch. Flexco Tools and Rip Plate Tool are used. For complete information ask for Bulletin F-100.

Sold by supply houses everywhere



"CONVEYOR BELTS EASILY FASTENED"

FLEXIBLE STEEL LACING CO.
Chicago, Ill.
4697 Lexington Street

(*Continued from page* 341)

effect" of the continuing existence of synthetic facilities should guarantee that Americans—who use as much rubber as all the rest of the world combined—will not have to pay excessively high prices such as have marked earlier periods in the rubber industry's history.

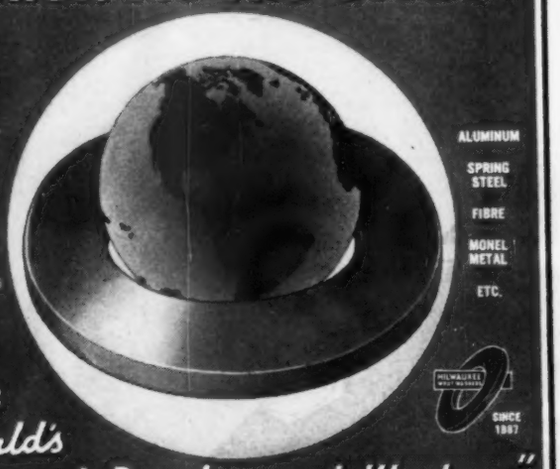
The Akron executive pointed to "the widespread potential benefits of more and better products, and more employment opportunities," that low-cost raw materials could bring in the postwar period. He rated this factor as second only to that of national security in determining policy with respect to the synthetic rubber producing facilities which he called "the only workable means of assuring our country an adequate, 'war-proof' supply of this indispensable raw material." He said it was impossible to forecast now whether synthetic or natural would dominate the world rubber picture in the future, saying "maybe neither will really dominate."

FORECASTS OBSOLESCENCE OF GEAR BOXES AND GEAR REDUCTION

THE time is coming when all large power plants for locomotives, airplanes and ships will operate on the turbine principle, according to Thomas R. Smith, chief engineer of research and development for The Maytag Company. This development, Mr. Smith said, would make all reciprocating types of engines of large horse power obsolete.

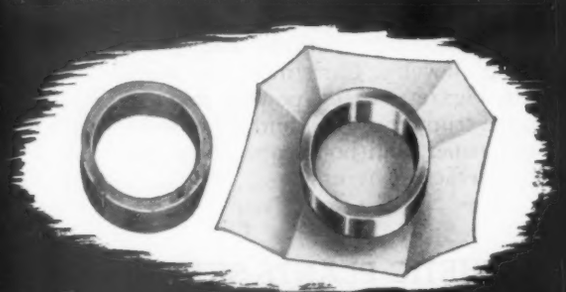
He also predicted that gear boxes and gear reduction in large installation would also become obsolete, as variations in speed and torque would be accomplished both hydraulically and electrically with greater smoothness and longer life.

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THE NEWTON MANUFACTURING CO., PLAINVILLE, CONN.

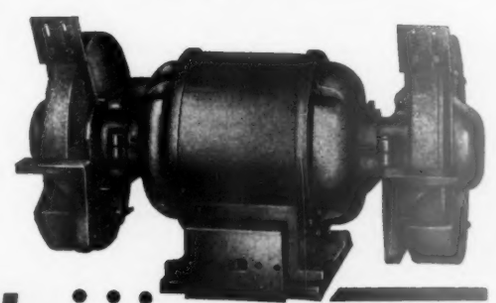


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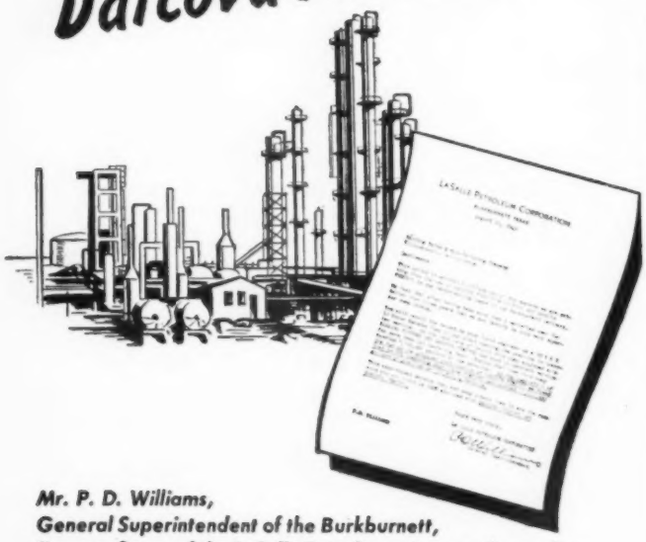
VICTORY on the production front is being aided mightily by the economical and faithful service of thousands of Valley motors and grinders in war plants everywhere.

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You will recall the report by your field engineer on a 10 x 6 x 12 Union Burnham Pump in our plant pumping raw gasoline in transfer service. On the last date of report this pump equipped with DARLING PISTONS AND DARCOVA PUMCUPS had been in constant service for more than 245 operating days. During that time this pump handled 7,350,000 gallons of raw gasoline. At the completion of the run on the original installation of DARCOVA PUMCUPS we found that in 501 operating days these PUMCUPS had handled 15,030,000 gallons of gasoline or 357,857.14 Barrels.

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Mr. Williams is just one of thousands of users who have proven to themselves that Darcova Pumcups bring unusual savings and maximum pump efficiency. Darcova Pumcups are readily applied to any reciprocating pump for water, oil, gas, steam, alkalies, acids or many other fluids. For the whole story write for Pumcup Bulletin 4105.



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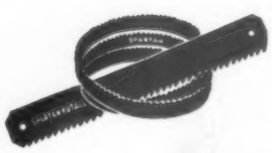


Specify

SPARTAN

HACK and BAND SAW BLADES

Spartan Saws have been recognized, for the past twenty five years, as leaders in the hack and band saw field.

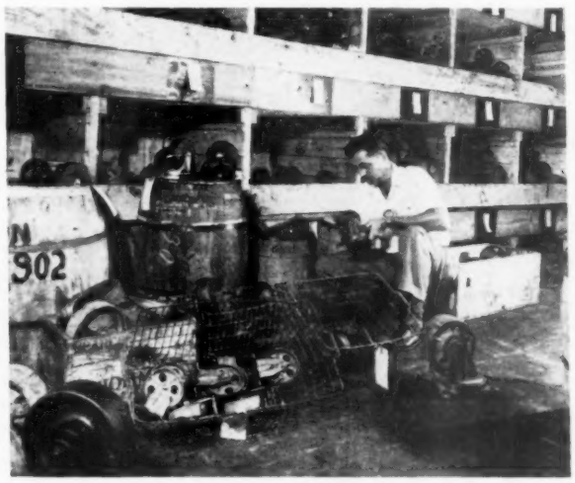


Spartan makes a complete line of hack saw blades, also wood and metal cuting band saws; available for promptest possible shipment under existing conditions.

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Fiske and Wason Aves.
Springfield 7, Mass., U. S. A.

SALVAGE $20,000 WORTH OF CASTERS

WITH casters, particularly steel ones, required for trucks and dollies on new contracts proving hard to obtain, and delivery dates running six weeks and longer, the Tool Design Methods Group of The Glenn L. Martin Company, Baltimore, Maryland, recently made a round up of all casters available from obsolete and cancelled trucks and tools.



Glenn L. Martin Company garners 2000 usable casters valued at $20,000.

As a result of the survey a stockpile of more than 2,000 usable casters valued at $20,000—even more if the time that would have been lost awaiting deliveries is considered—was built up, including flat, grooved, steel, rubber and plastic wheels in a wide assortment of sizes.

The salvaged casters have all been carefully inventoried, with inventory records being kept in the Tool Design Department, and the casters, themselves, stored in the Tool Crib.

* * *

HEAVY INDUSTRIAL BUILDING FORECAST

New Automatic Machinery and Modernizing Indispensable in New Competitive Era

IN the first three to five post-wear years the United States will experience the greatest volume of industrial building and greatest employment of construction workers of any similar peace-time period, according to S. M. Rust, Jr., vice president of The Rust Engineering Co., of Pittsburgh, Pa., and Birmingham, Ala.

This building will start in large volume immediately after war restrictions are relaxed, as industries rush preparations to skim the cream from huge pent-up post-war markets, Mr. Rust said.

Thousands of inquiries and orders for designs of new plants and alterations of existing plants have been, and are being, received by engineering firms throughout the country, providing a solid, factual basis for his assertion. The type of designs most usually sought are "master plans"—not for single structures—but covering all the building and development contemplated by the firms concerned for five or more years.

"Contrary to popular belief," he declared, "our tremendous construction of war plants will not halt

(*Continued on page* 349)



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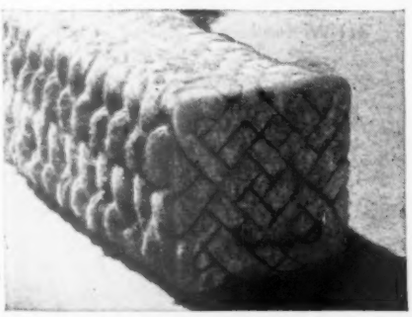
"And don't forget how well those KLOZURE Oil Seals are working out."

Yes, GARLOCK products give superior performance for our Armed Forces and for industry everywhere. You can rely on their dependable service.

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GARLOCK LATTICE-BRAID PACKING. The unique structural design imparts semi-automatic pressure action. Available in several styles for various types of service.

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LYON Steel Stools





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No. 1226
Equipped with adjustable back and pressed wood seat. As shown, 26" high, $2.85

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Basic Stool 22" high, with one channel brace foot rest. As shown, $1.70.



Above prices are F.O.B. Factory. When shipment is made from nearest assembly plant, prices will be quoted F.O.B. that plant.

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4 WHEEL TRUCKS



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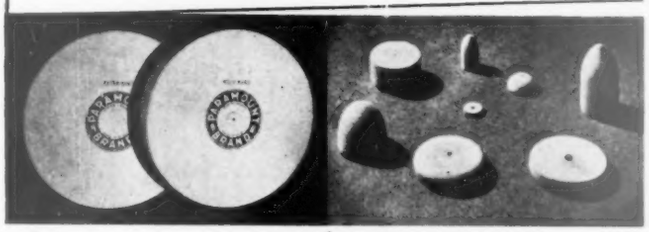


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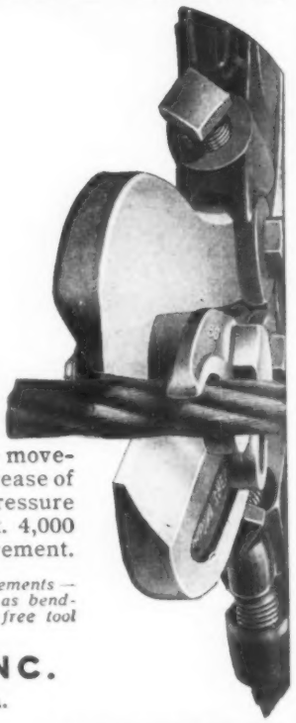
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ASK YOUR WHOLESALER
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(*Continued from page 345*)

or make unnecessary extensive post-war industrial building.

"The effect will be just the opposite. The huge competitive potentialities of these plants will force industrial management to modernize to the limit and to build many entirely new plants.

"The combination of this biggest production capacity ever known, the biggest consumer market (as verified by research polls), and most extensive launching of new materials and products, represents the key to post-war industrial construction.

"To meet this unprecedented competition, far-reaching reorganizaion of plants and operations is being prepared by a great number of industrial firms. Two major factors in most future planning are:

1) "One hundred per cent continuous, assembly line type production, machine-operated to the fullest extent. In pre-war years less than 50% of industry produced on such a basis.

2) "Standardization of products to a hitherto unimagined extent, both for industrial use and the public. One of the most significant post-war trends, standardization will cut costs throughout industry.

"This is not theorizing. The plans are already on engineering drawing boards. We have had requests for streamlined, standardized-product, plant designs for everything from machine tool metals, to house furniture, to steel caskets.

"Scientifically designed mass production is being projected in every conceivable field.

"Existing plants, ranging from thousands built before or during World War I to many built for armament purposes in this war, will no more be able to compete with post-war factories specifically designed for their products than the bow and arrow with the machine gun.

"Many of our older existing plants were erected without *any* plan, merely as sheds to house machines. Other existing factories have grown haphazardly, with buildings, extensions, or lean-tos added here or there until the resulting hodge-podge became chaotic. Still others were pressed into operations for which they were not originally intended; while others are using old-fashioned or inefficient methods because their sites or lay-outs allow no other choice.

"Such plants are doomed by the laws of economics. Many appear to be operating successfully only because of war economy. In comparison, the new post-war plants will be marvels of efficiency.

"Particularly the value received per labor man hour will be increased. This is a factor of major importance since reductions in industrial wage scales are not anticipated, requiring the most efficient use of labor to maintain reasonable consumer prices.

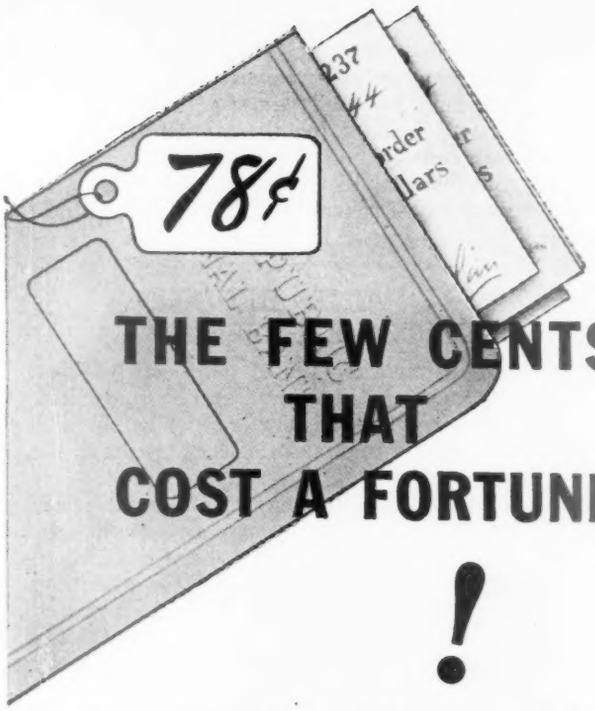
"To this end, conveyor systems (floor, work-height and overhead) will do away with hauling and carrying. Scientific flow plans will make maximum use of the plant sites, eliminating backtracking or waste movement from raw material to the finished product.

"New automatic machinery will improve almost all processes, and greatly alter some by the elimination of handwork.

"Improved working conditions will increase out-put. These will include air-conditioning, automatic dust removal, improved lighting, maximum cleanliness, sound proofing, cheerful cafeterias, etc., arrangements of parking lots and entrances to eliminate lost time between portal and machine.

"The major part of this new building, according to inquiries received, will be devoted to large additions,

(*Continued on page 350*)



THE FEW CENTS THAT COST A FORTUNE !

We knew a buyer who saved his company pennies on a purchase of leather belting. We know the belt, too, and it has cost the same company a small fortune in maintenance, and a larger fortune in the production it failed to deliver over the course of time.

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Supplied in rolls with simple tools to make any length endless quickly. Eliminates large inventory; waiting delivery for odd sizes. Pays for itself in a short while.

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LEATHER BELTINGS • SPECIALTIES AND HYDRAULIC PACKINGS
31 FERRY ST., NEW YORK 7, N. Y.
60 Front St. W., Toronto, Ont.

(*Continued from page 349*)

alterations and conversions at existing plants, but a considerable percentage will consist of new plants. The fabricating field, especially those dealing with new developments, will account for the largest percentage of the post-war construction effort.

'Certain raw material plants, producing steel, non-ferrous metals and basic chemicals, will be least subject to change."

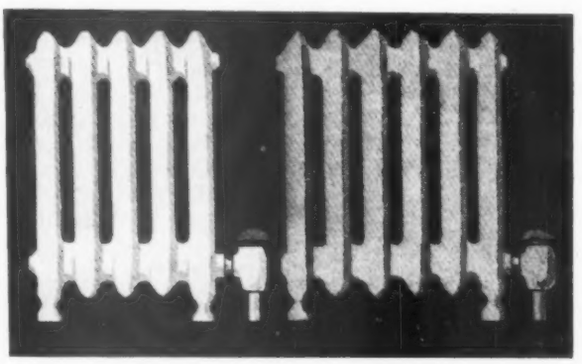
METAL PAINTS REDUCE RADIATOR EFFICIENCY

A RADIATOR neither creates nor destroys heat. Naturally, a large radiator can put more heat into a room than a small one, but it must be supplied with enough heat for maximum usefulness, and the following data are based on this supposition.

After these preliminary explanations, we may proceed to consider what kind of effects may be obtained by the use of various kinds of paint. Heat is emitted from a radiator in two ways: first, the air streaming past the radiator and rising from it is heated and carries the heat to other parts of the room; and second, the hot surface of the radiator emits heat by radiation just as glowing electric and gas heaters do. Most types of steam and hot water "radiators" emit less than half their heat by radiation and evidently the name "radiator," although universally used, is not a particularly appropriate one.

To take a concrete case, a particular sectional cast iron radiator, if painted with any non-metallic paint, might transfer into the room 180 B.t.u. per hour for each square foot of its surface. Of the 180 B.t.u. per hour transferred, about 2/3 or 120 B.t.u. would go to heating the air which passes over the radiator. The 120 B.t.u. transferred directly to the air would not be increased or decreased by repainting the radiator.

The remaining 60 B.t.u. not carried off by the air is emitted as radiant energy. The amount of radiant energy which can be emitted per hour by the hot

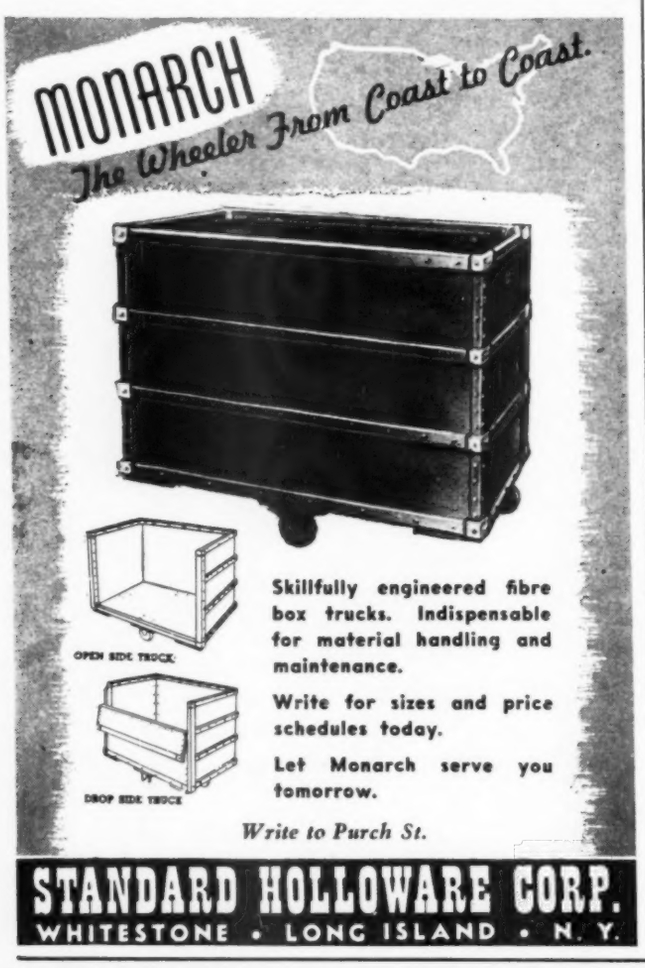


Painted 5-section radiator has heating value equal to that of 6-section metallic coated radiator.

surface is dependent upon the kind of paint used for the last coat. It was assumed that the radiator was painted with non-metallic paint. If it be repainted with a metallic paint, such as aluminum or bronze, it will no longer be able to radiate 60 B.t.u. per hour, but may be able to radiate only 30 B.t.u., so that instead of transferring 180 B.t.u. to the room per hour it can now transfer only 150 B.t.u. The coat of aluminum or bronze paint is not an insulating covering like a covering of magnesia or asbestos but it has a similar effect, although for an entirely different reason. The resulting reduction in heat emission is entirely due to the reduction in the radiating power of the exposed surface rather than to the insignificant insulating value of the thin layer of paint.

It is therefore evident that undercoats of paint, regardless of kind, have no significant effect on the performance of the radiator except in the very unusual case where the paint was thick enough to act as an insulating covering. From a heat release standpoint, therefore, it is necessary to remove the old paint in repainting a radiator. The effect of adding the non-metallic paint as a finish coat is equivalent to adding one section to the radiator. Thus, a radiator of five sections painted with white or tinted paint should be about as effective as another of six sections of the same kind painted with metallic paint since each would transfer the same amount of heat to the room, provided the necessary amount of heat were supplied to each.

Paint Progress



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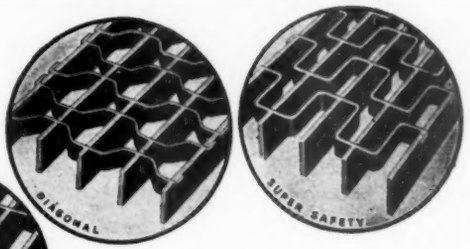
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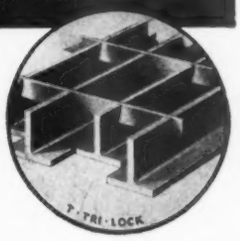
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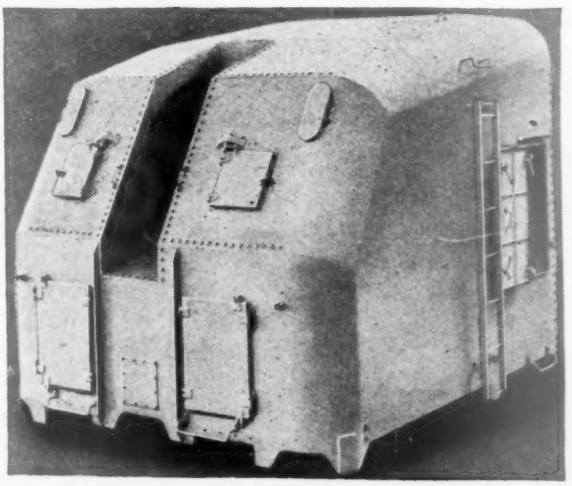
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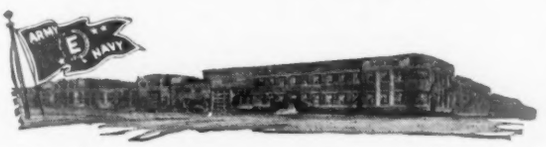
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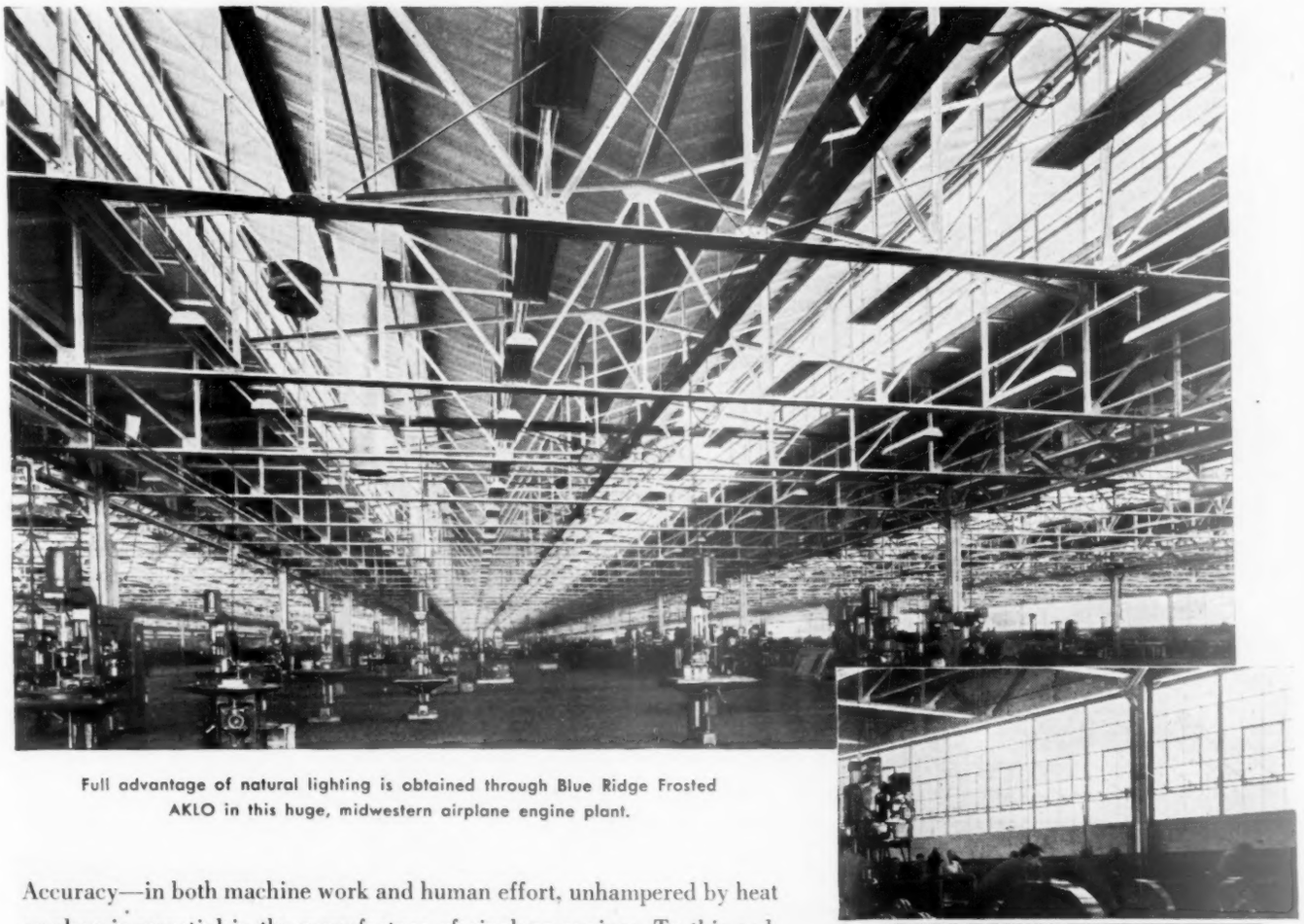
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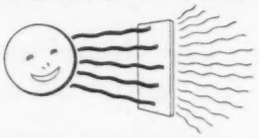
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IN THE MIDST OF GLOBAL WAR...

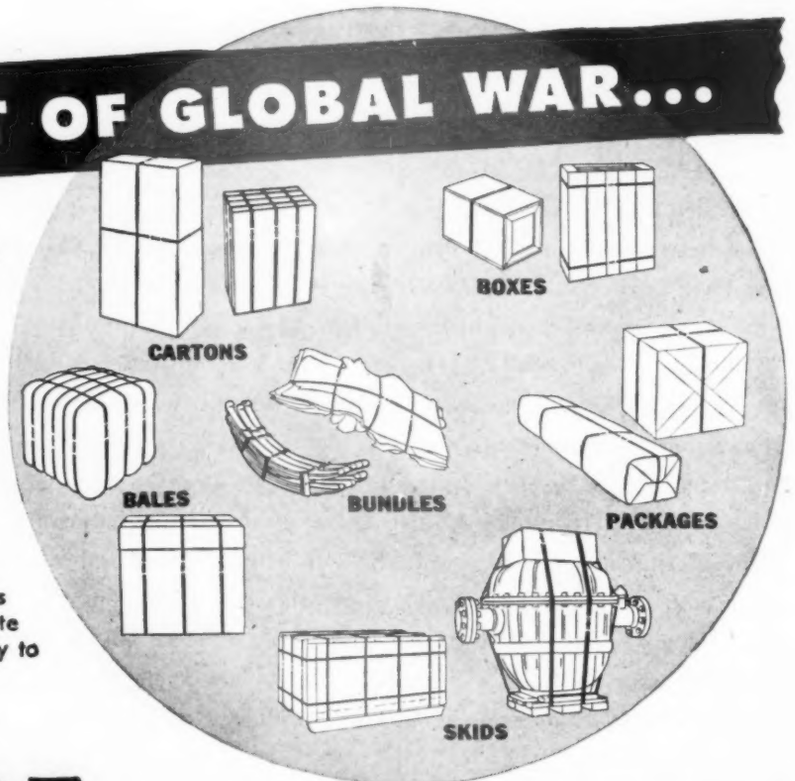
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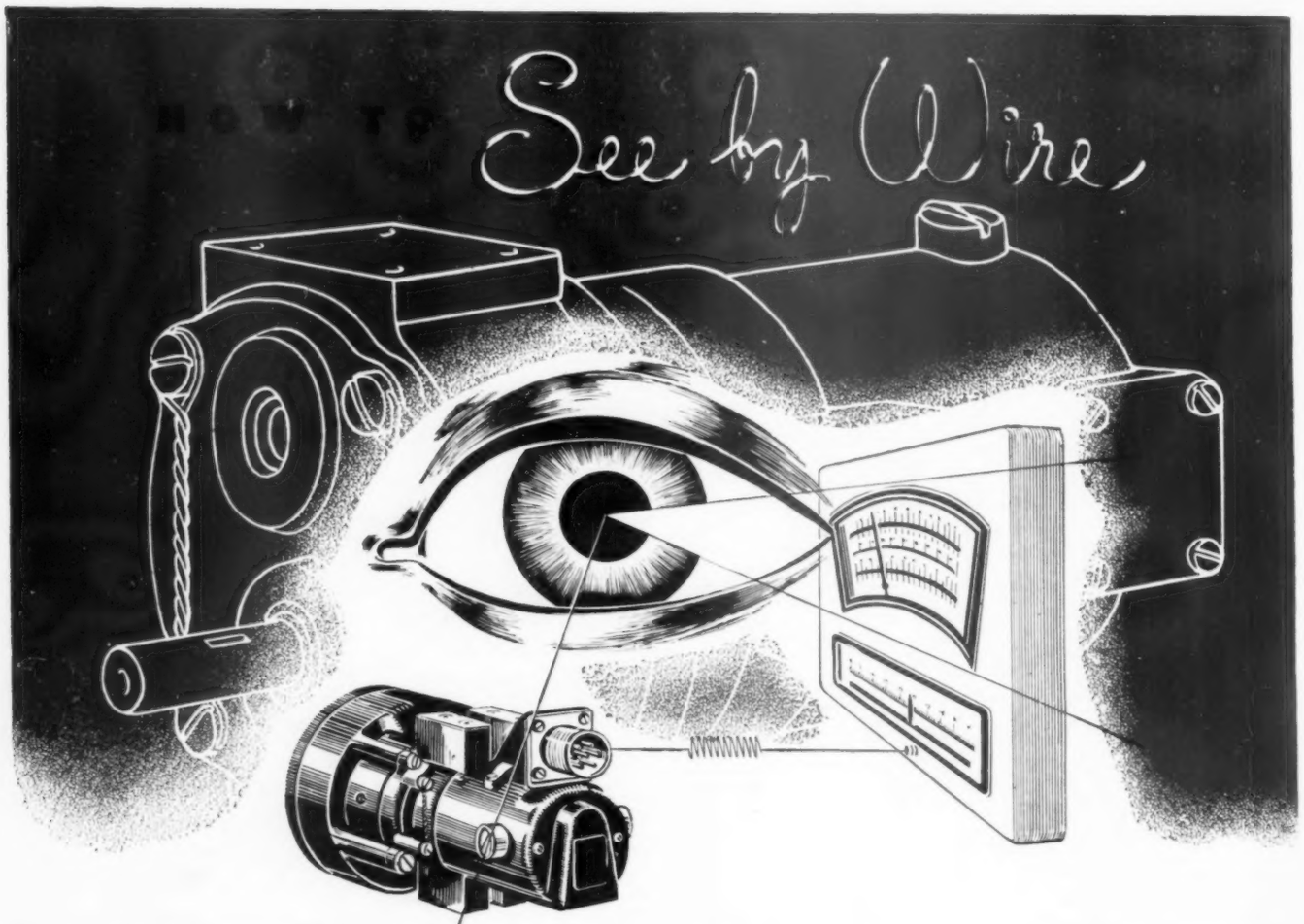


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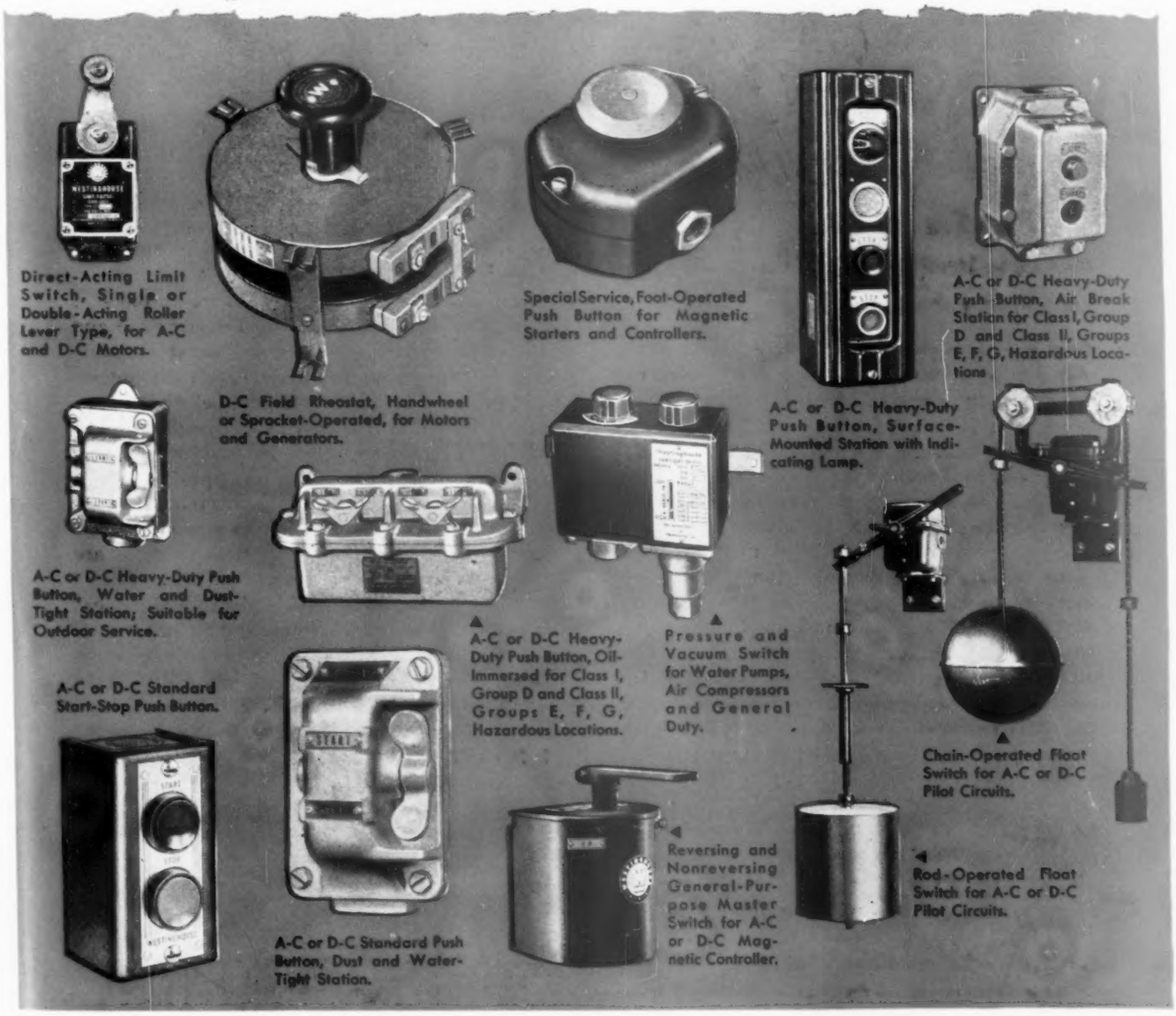
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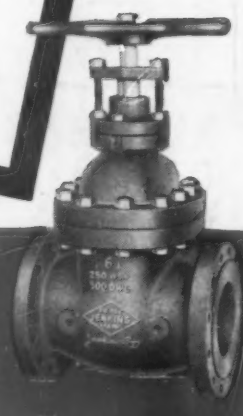
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